INFRASTRUCTURE ITALIA LAND 2 Srl
Via del Bosco Rinnovato, 6
20057 Assago (Milano)

Valutazione di Impatto Ambientale ai sensi del Titolo III del d.lgs. 152/2006
Pacchetto Architettonico MIL07

Data Center CAMPUS di Siziano
Siziano (PV)

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Il Tecnico
DBA

Architetto
DANIELE
DE BETTIN

STACK INFRASTRUCTURES

Via Lombardia 1, Siziano, MI, Italy

MIL07

Report – Architectural Statement of Requirements

MIL07-DBA-XX-XX-RP-A-14001

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Branch Office	Head Office
DBA S.p.A. Via Natale Battaglia 10 20127, Milan Italy +39 0422 693511 dbaprogetti@pec.dbagroup.it www.dbagroup.it	DBA S.p.A. Santo Stefano di Cadore 32045, Santo Stefano di Cadore (BL) Italy +39 0422 693511 dbaprogetti@pec.dbagroup.it www.dbagroup.it

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1. GENERAL

1.1. Introduction

The document at hand concerns the Architectural Statement of Requirements (SoR) for the Data Center MIL07 of Stack Infrastructure in Siziano (Pavia).

The determination of the material quantities is to be read out from the civil, architectural and structural drawings/dimensions and is to be established by the contractor.

The realization of all described works in this report falls on the responsibility of the contractor and are to be fully included in the offer as well as all expenses from the following explanations and requirements.

Project summary:

- Project name: MIL07
- Project address: Via Lombardia 1, Siziano (Pavia), Italy
- Phase: Phase 1, Phase 2;
- Owner: Stack Infrastructure
- Design Engineer: DBA S.p.A.

The MIL07 Data Center is a one-storey building combined as follows:

- Data Hall part: one-storey building with two Data Halls (12MW IT) and a structural platform above the roof where the chillers are to be installed;
- Administration Block: two-storey building with main entrance, SOC, offices, storages, telecommunication rooms, technical rooms at service of the entire building.

The facility is functionally divided in 3 parts as per following naming standard:

- **AZ** Facility A *Entire Building*
- **AF** Facility A Facility Support *Administrative Block*
- **A1** Facility A *Data Hall Block 1*
- **A2** Facility A *Data Hall Block 2*

The facility will house data processing equipment (telecommunications and computers), that will serve various businesses and enterprises that deliver on-line data services to the area. The building will have 24/7 operation with secure access, few visitors and occasional deliveries.

Most of the building area will be comprised of data processing equipment rooms, and the air-conditioning equipment which support those rooms. The building will include fire protection sprinklers and smoke detection system to provide early warning of any combustion events.

The building will have a small administration component (offices and maintenance) for support personnel for the facility.

Average staff on site per day will be about 40 persons, maximum 48. The fire permit report states a maximum occupancy of 48 persons per the entire 12MW building.

Deliveries will come to the truck dock located in the southern corner of the building during initial deployment of equipment or periodic refresh of equipment. These deliveries may generate some rubbish; packing materials mostly, which will be compacted on site. Deliveries after the initial deployment will occur sporadically.

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An approximately 3-meter-tall platform, that supports air-conditioning equipment (chillers) for the facility, will be provided above the roof of the building. These chillers and platform will be screened from view with a vertical mesh wall equipped with grating panels.

The roof is accessible through one internal staircase and one freight elevator (the closest to the loading/unloading area), both located in the Administrative Block, and 2 external staircases, mainly used for escape purpose. On the chiller platform on the roof, a jib-crane will be installed in order to facilitate equipment maintenance access to the platform (max capacity considered at this stage 500kg). Two containerized small pump rooms will take place on the roof, along the two short sides of the chiller platform.

An equipment yard is planned on the South side of the building. It will host outdoor elements with space for PODs (container specifics can be found in OFCI design package, layout can be found in architectural and electrical drawings) and diesel generators.

The facility includes multiple space designations, each requiring specific standards for interior finishes, door specifications, and access control systems. These designations are the following:

- Rooms Designated as “Critical Spaces”:

  Data Halls (DHs), MMRs, CERs, PODs, Mechanical galleries, Point of Entry rooms for fibre (POEs), Intermediate distribution frame rooms (IDFs).

- Rooms Designated as “Non-Critical Spaces”:

  All other spaces e.g. Office, lobby, flex space, customer offices and storages, corridors, loading dock, restrooms, janitor closets, break rooms.

Some explanatory texts:

- “FoH” means Front of House: in this part of the building are housed the offices, meeting rooms and welfare rooms.
- “Data-Hall” means the part of the building with the White Spaces, the accompanying technical rooms and technical platform on the roof.
- “Pumphouse” means the prefab containers for mechanical technical equipment on the roof.
- Where this document states “Building”, the whole is meant consisting of Data-Hall, FoH and including roof platform.

The building dimensions are:

- Total length of the building: approx. 210 m
- Total width of the building: approx. 30 m
- Building height (up to the top of the Data Hall roof): approx. 7 m
- Building height (including platform above roof): approx. 10 m
- Building height (Administrative block roof): approx. 12,85 m

Explanation of terms:

- Employer: Client / owner: Stack Infrastructure
- Engineer: Designing and engineering parties:

  DBA S.p.A.

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- Contractor: The company that will build and install the project, based on a contract with the Employer.
- Sub-Contractor: Company that participates in the construction and installation of the project on behalf of the Contractor.

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1.2. Demarcations

The complete works are split up in separate lots / packages:

- Civil (Infrastructural): Above and underground, site preparation (including excavations and dewatering) and site finishing works.
- Architectural, Shell & Core and Fit-out: The building with its exterior and interior finishing itself.
- Structural: The building with its structural system, including the groundwork required for the construction.
- MEP systems integration and Fit-out.
- Deliveries / works by and on behalf of the Employer.

The document at hand concerns the technical specifications (SoR) of the architectural works (A) for the DataCenter-project.

1.3. Technical Specifications: minimal quality requirements

These Technical Specifications define the minimal quality requirements for systems, elements, components and materials. The Contractor, regardless of the work-package, shall fulfil the minimal quality requirements as indicated in these Technical Specifications. Furthermore, the Contractor shall fulfil all local, national (and European regulations if applicable) and the Building Permit stipulations at the moment of tendering.

In case of discrepancies and/or differences between this document and the drawings, the SoR has to be followed first, then drawings.

In this document, the location of the various components is indicated under "scope". Components that are not mentioned under “scope”, but are indicated on the drawings, shall be delivered and installed, as part of the total to be handed over project.

Reference brand:

Where in these Technical Specifications a reference brand name is written, this reference brand name (including type) indicates the quality, shape, function, finishing, etc. of the applicable systems, elements, components and materials.

The Contractor is free to propose an alternative brand/product (including type) and shall prove that the quality, shape, function, finish, etc. is the same as the reference brand/product and must have (if necessary) a “European Technical Assessment (ETA)”.

Written approval on the alternative brand (and type) shall be given by the Employer and/or Engineer (Designer) before ordering, delivery and installation by the Contractor. The Contractor shall request an alternative timely to allow sufficient time for assessment of an alternative brand. Guarantee certificates shall be handed over to the Employer and/or Engineer (designer). Aforementioned shall include CE marking certificates in case of European products (following European Regulation n° 305/2011: Construction Products Regulation - CPR), and equivalent certificates in case of other products. The Contractor proposing the alternative brand shall be responsible for all costs incurred by the proposed and approved alternative except if otherwise agreed upon in writing by the Employer/Engineer.

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The indication of the location or spot of the described systems, elements, components, and materials (Scope) in these Technical Specifications is for information only. All systems, elements, components, and materials as shown on the drawings of the building and/or as written in the document at hand shall be delivered and installed by the Contractor(s).

For anything not expressly contained in these Specifications, please refer to the provisions of current legislation on the subject for any further fulfilment during the work.

Below the main regulations that must be respected where applicable:

L. 09/01/1984 n. 13 "Eliminazione delle barriere architettoniche" e successive modifiche ed integrazioni

D.M. 19/04/2000 n.145 "Capitolato generale d'appalto"

D.P.R. 25/01/2000 n.34 "Qualificazione delle imprese"

D.Lgs. 29/12/2006 n.311 "Disposizioni correttive ed integrative al D.Lgs. 192/2005 relative al rendimento energetico in edilizia" e successive modifiche ed integrazioni

D.M. 16/02/2007 "Classificazione di resistenza al fuoco di prodotti ed elementi costruttivi di opere da costruzione"

D.M. 09/03/2007 "Prestazioni di resistenza al fuoco delle costruzioni nelle attività soggette al controllo del Corpo nazionale dei vigili del fuoco"

D.Lgs. 09/04/2008 n.81 "Testo unico sulla sicurezza" e successive integrazioni e modifiche

D.P.R. 05/10/2010 n.207 "Regolamento di attuazione del D.Lgs. 12 aprile 2006, n.163"

D.P.R: 01/08/2011 n.151 "Regolamento recante semplificazione della disciplina dei pro-cedimenti relativi alla prevenzione incendi"

L. 28/12/2015 n. 221 Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali

D.Lgs. 50 del 2016 Codice dei Contratti Pubblici e s.m.i.;

D.M.11/10/2017 Affidamento di servizi di progettazione e lavori per la nuova costruzione,

ristrutturazione e manutenzione di edifici pubblici

D.M. 17/01/2018 Norme tecniche sulle costruzioni

Circ M.I.T. 21/01/2019, n. 7 "Istruzioni per l'applicazione dell'«Aggiornamento delle "Norme tecniche

per le costruzioni"» di cui al decreto ministeriale 17 gennaio 2018

Codice di prevenzione incendi D.M. 3 agosto 2015 «Approvazione di norme tecniche di prevenzione incendi, ai sensi dell'articolo 15 del decreto legislativo 8 marzo 2006, n. 139» e s.m.i. aggiornato con le modifiche successive e vari chiarimenti e commenti

Mortars:

UNI 6687: "Malta normale – Determinazione del ritiro idraulico – Prova di laboratorio"

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UNI 7044: “Determinazione della consistenza delle malte cementizie mediante l’impiego di tavola a scosse”

UNI 7121: “Malta normale – Determinazione del contenuto d’aria”.

UNI 7927: “Malte – Determinazione della resistenza alla penetrazione e dei tempi di inizio e fine presa”.

Masonry:

D.M. 20 novembre 1987 («Norme tecniche per la progettazione, esecuzione e collaudo degli edifici in muratura e per il loro consolidamento»)

UNI 8942/2 murature non portanti

Legge 02 Febbraio 1974 n° 64 e D.M. 03 Marzo 1975 materiali laterizi da impiegarsi nelle zone sismiche

Piping:

UNI 7448/75 tubi di PVC

UNI 7443/75 e UNI 7445/75 scarichi

UNI 7447/74 condotte interrate

UNI 7442/75 pezzi speciali

Furthermore:

- • UNI UNEL standards and tables for unified materials;
- • Standards on electromagnetic compatibility;
- • ISPESL and ATS regulations, recommendations and prescriptions;
- • Prescriptions of the territorially competent Fire Brigade command;
- • Prescriptions of the energy distribution company of the territorially competent Telephone Service;
- • Prescriptions, Regulations and recommendations of any other institutions issued and applicable to the materials and / or plants subject to the work.

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1.4. Workshop drawings and calculations

The RIBA 3 design and Building Permit Application documents will be worked out by the Engineer on

behalf of the Employer. Contacts with the national and local authorities with regard to obtaining the building permit, and associated fees, will be taken care of by the Employer and / or Engineer on behalf of the Employer.

The Contractor shall prepare all detailed workshop (production) drawings and calculations for phase RIBA 5. For documents prepared by the contractor, the contact with the authorities / municipality and the approval of these documents shall be arranged and coordinated by the contractor while informing the Employer and Engineer.

The documents submitted with the invitation to tender are those to be further worked out by the Contractor for the execution / construction of the project. The Engineer and/or Employer will not submit any other documents to the Contractor unless otherwise stated in the document at hand.

Workshop (production) drawings and all necessary detailed calculations shall be prepared by the Contractor. Drawings and calculations shall be handed over in both hard and soft/digital copy format for the approval by the Employer and/or Engineer. Soft / digital copy format shall be in .dwg / .txt / .pdf.

All drawings and documents shall be provided with Stack document numbers (according to the guidelines and naming standard contained in BEP and/or provided by the Employer), suitable for “ACC Autodesk Construction Cloud” and/or “Procore”.

Workshop (production) drawings and detailed calculations include, but are not limited to:

- Watertight membrane basement and protective geotextile
- Fibre cement-based panels (including fixation)
- External and internal doors, door frames, windows and curtain walls, internal mesh walls
- Ventilation louvres
- Sun shading screens and louvres
- Sandwich panels exterior walls, including all fixations, strips and flashings, and accompanying cassette panels
- Steel stairs, balustrades, railings, cage ladders, expanded steel sheets
- Steel safety cables on the roofs (Fall arrest system)
- Roof structure including condensation calculations
- Gypsum board walls and -ceilings, including framework and fixation structures
- Internal blockwork and panel walls, including supporting and fixation structures
- Suspended ceilings
- Floor finishing materials
- Lifts and lifting platforms
- Dock boards
- Hoisting cranes
- Fixed furniture (Stack branding items).

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Scale of the drawings shall be minimal 1:100 and shall show lay-outs, sections, elevation views, details, finishing materials, doors and windows, stairs, balusters, platforms, (goods) lifts, fixations, sealants, etc.

Delivery and installation can only begin after approval of all necessary documents by the Employer and/or Engineer and in case applicable Authorities.

The Contractor remains responsible for the correctness of the drawings and calculation, such as materials, dimensions, numbers, regulations, loads, fire-safety, fixations, and colours, despite verification and release by the Employer and/or Engineer.

The Contractor shall indicate on the drawings all openings for technical installations and the openings for the work packages which are not in the scope of the Contractor.

1.5. Warranty periods for systems, elements and components

Following systems, elements and components shall be warranted during indicated periods, by the applicable Contractor:

Concrete works:	10 years
Concrete works basement (water-tightness):	20 years
Prefabricated concrete elements:	10 years
Steel structure works:	
• Structure:	10 years
• Anti-corrosive coatings:	2 years
• Fire resistant coatings:	2 years
Hot dipped galvanised grid floors:	10 years
Stainless steel safety cables:	10 years
Door- and window frames, doors, curtain walls:	
• Frames, doors and hatches:	10 years
• Ironmongery:	2 years
• Revolving doors:	5 years
• Sun shading screens	5 years
Sandwich panels, corrugated steel sheets (elevations):	10 years
Steel and concrete stairs, platforms, balusters, railings:	10 years
FiberTite-, PVC- roofing layers and other roofing materials:	10 years
• Extended warranty period:	20 years
• Installer’s guarantee:	5 years
Glazing (single, safety, double/triple insulating):	10 years

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Joints and joint sealants:	5 years
Wall- and ceiling systems:	10 years
Wall- and door protection:	5 years
Fire boarding:	10 years
Ventilation louvres in elevations:	5 years
Fibre cement-based panels (including fixation):	10 years
Wall- and floor tiles:	6 years
Cement sand screed floors:	5 years
Industrial floors:	10 years
Metal and plastic works:	10 years
Fine timberworks (if applicable):	6 years
Painting works external:	5 years
Painting works internal:	5 years
Floor coverings:	5 years
Epoxy painting:	5 years
Lifts:	3 years
Scissor lifting tables:	5 years
Dock boards:	5 years
Pavement:	10 years
Fixed furniture:	3 years
Lockers;	5 years

The warranty periods shall start at the date of completion (hand over) of the project.

In case longer warranty periods are described in other contract documents these longer warranty periods prevail.

1.6. Insulation values and insulation materials

The maximal thermal transmittal U-values for the Stack Milan project shall be based on the below indicated table.

The regulation to be considered is the “D.d.u.o. 18 dicembre 2019 - n. 18546 Testo unico sull’efficienza energetica degli edifici”. Melegnano is located in climatic zone E.

The U-values indicated in the table below shall refer to elements separating heated spaces from the exterior or from unheated rooms.

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Building element:	Maximal U-value:
Ground floor slabs (Data Halls / technical rooms)	U ≤ 0.80 W/m²K
Ground floor slab (Offices)	U ≤ 0.26 W/m²K
External walls / Walls bordering with unheated rooms	U ≤ 0.34 W/m²K
Roofs	U ≤ 0.22 W/m²K
Windows and curtain walls	U ≤ 1.40 W/m²K
External doors in general (steel and aluminium doors, logistics overhead doors)	U ≤ 1.80 W/m²K

1.7. Fire safety requirements

The fire safety requirements are indicated by the current fire regulations.

Together with building permit, a fire strategy permit will be submitted to the Local Fire Brigade by the Engineer on behalf of the Employer.

Fire rating and building materials specified in the document at hand are based on fire strategy permit and local regulations (Codice di prevenzione incendi. D.M. 3 agosto 2015 e s.m.i. aggiornato con le modifiche successive e vari chiarimenti e commenti) and all the related local and European rules.

Where differences occur in the requirements, the highest demands shall be leading. This applies among others to the fire resistance and smoke tight rating of several doors and walls, the fire rating of building materials and the scope of the fire safety provisions and installations. Where there will be discrepancies in requirements, the higher requirement will always be preferred.

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1.8. Acoustical requirements

Minimal acoustic insulation values for internal walls - for the total partition construction, including all connections to other building elements, door and door frames, internal door glazing and all (closed) penetrations.

Separation Between	*Wall (Rw)*	*Door (Rw)*
Data Halls / Mechanical Galleries - Corridors	42 dB(A)	32 dB(A)
Office Rooms - Corridors	42 dB(A)	32 dB(A)
Office Rooms – Office Rooms	42 dB(A)	---
Office Rooms – Meeting Rooms	42 dB(A)	37 dB(A)
Office Rooms – Sanitary Rooms	42 dB(A)	---
Meeting Rooms – Sanitary Rooms	45 dB(A)	---
Meeting Rooms - Corridors	42 dB(A)	37 dB(A)

Values refer to weighted sound reduction index (Rw) in dB(A).

Doors shall be acoustically rated and installed to maintain the required overall partition performance.

Acoustic sealings and perimeter detailing must ensure continuity of sound insulation.

Acoustical insulation of external facades and roofs office, meeting and social areas shall be minimal:

Construction element	*Rw*
Facades	50 dB(A)
Windows and doors	39 dB(A)
Roof	66 dB(A)

The following standard and rules shall be followed in addition to all related studies provided by other parties (Environmental Impact Assessment, Acoustic Impact Assessment):

- “Legge 26 ottobre 1995, n. 447 - Legge quadro sull'inquinamento acustico”
- art.3 comma 1 punto a): Determinazione dei Valori Limite di sorgenti fisse, DPCM 14 novembre 1997
- “Disposizioni per il contenimento e la prevenzione dell'inquinamento acustico derivante dal traffico veicolare, a norma dell'articolo 11 della legge 26 ottobre 1995, n. 447” - DPR 30 marzo 2004, n. 142
- art.3 comma 1 punto c): Tecniche di rilevamento e di misurazione dell'inquinamento, stabiliti dal Decreto del Ministero dell'Ambiente del 16 marzo 1998
- UNI 11143 Acustica - Metodo per la stima dell'impatto e del clima acustico per tipologia di sorgenti
- UNI 10855 Acustica - Misura e valutazione del contributo acustico di singole sorgenti

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- UNI EN 12354-3 Acustica in edilizia - Valutazioni delle prestazioni acustiche di edifici a partire dalle prestazioni di prodotti - Parte 3: Isolamento acustico contro il rumore proveniente all'esterno per via aerea
- UNI EN 12354-4 Acustica in edilizia - Valutazioni delle prestazioni acustiche di edifici a partire dalle prestazioni di prodotti - Parte 4: Trasmissione del rumore interno all'esterno
- JCGM 100:2008 / ISO Guide 98-3 (GUM Guide to the Expression of Uncertainty in Measurement)
- ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors - Part 1: Calculation of the absorption of sound, by the atmosphere

Where differences occur in the requirements, the highest demands shall be leading.

1.9. Airtightness of walls and roofs

The external and internal walls of the Datacentre shall be airtight on a high degree.

Means that all joints between different building elements, such as sandwich panels and steel structure, shall be provided with foam tapes and /or elastic joint sealants.

Doors, doorframes, hatches, etc. shall be provided with (double) draught strips.

Joints between the internal steel sheets of sandwich panels shall be provided with elastic joint sealants and/or draught strips.

The airtightness of the floors, walls (internal, external, technical air shafts), sandwich panels, roofs and all elements included such as doors, windows and sealed/closed openings, shall meet the following requirements (at a pressure difference between both sides of 10 Pa):

Room/area:	*Air-tightness quality*	*Air-tightness per square meter floor area:* *maximal $q_{v;10}$ in $dm^3/(s\ m^2)$*
Not applicable	Excellent	<= 0.15
White spaces, air shafts, plenums	Very good	<= 0.2
Transportation areas (staircases, main corridors)	Good	<= 0.6
Technical rooms (with exception of louvres)	Basic	<= 0.9

Determination of air-permeability of buildings with fan pressurization method (blower door test) according to UNI EN 13829 - Building air-tightness, test method. Please note that measurements can take place at larger pressure differences than 10Pa. The Contractor may be asked to carry out such a test, at the expense of the Contractor if the result does not satisfy the requirements., at the expense of the Employer if the result does satisfy the requirements.

The airtightness of walls, floors and roofs of the Front of House part of the building shall comply with the standard Italian building regulations and with the following codes:

- EN 12114 – Air permeability of building components, test method.
- EN 13829 (withdrawn) / ISO 9972:2015 – Building air-tightness, test method (Blower Door).
- UNI EN ISO 9972:2016 – Italian adoption of ISO 9972.

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1.10. Level requirements floors

The maximal height differences of finished concrete floors (normally covered with an anti-dust paint or epoxy coating) are defined according to EN 50600-2-5 and TIA-942, for a good data-center engineering practice, with values as per following table:

Distance between two points (m)	***Maximum allowed height difference (mm)***	***Reference / Notes***
1 m	**±2 mm**	High precision for raised access floors and rack alignment
3 m	**±5 mm**	Typical tolerance for finished floor level (EN 50600-2-5 §6.2.3)
10 m	**±10 mm**	General tolerance for large areas (ISO 11064-4, TIA-942 clause 6.3)
Full room (≥ 20 m span)	**≤ 15 mm overall**	Recommended maximum deviation across entire data hall
Between adjacent raised floor panels	**≤ 2 mm**	Critical for tile stability and equipment wheels
Between adjacent rooms / thresholds	**≤ 10 mm**	Unless ramped transition is provided (ADA / ISO 21542)

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1.11. Exterior colours

ELEMENT:	MATERIAL:	COLOUR:	REMARKS:
FACADE			
PLINTH	Fiber Cement panels	Grey	Non-flat finish
FAÇADE SANDWICH PANELS – MAIN ELEVATIONS, STAIRCASES AND ELEVATOR AT THE ROOF LEVEL	Steel sheet	TRIMO QBISS ONE Horizontally laid insulated wall panel – Colour: light grey SW 7656 RHINESTONE	
FAÇADE ALONG EQUIPMENT YARD – SANDWICH PANELS	Steel sheet	TRIMOTHERM FTV Horizontally laid insulated wall panel – Colour: light grey SW 7656 RHINESTONE	
EYEBROWS IN FACADE	Steel sheet	SECRET FIX Board – Colour: dark grey SW 7074 SOFTWARE	
BRISE SOLEIL	Timber	CONTRASOL RED CEDAR TREATED TIMBER SOLAR SHADING	
EXPANDED METAL MESH PANELS AROUND CHILLERS PLATFORM AND AROUND EMERGENCY STAIRCASES	Expanded metal mesh panels	Light grey, RAL 7035	
GLAZING – MAIN ENTRANCE FACADE	Clear	No colour	
SPANDREL PANEL – MAIN	Spandrel aluminium panel with insulation	Colourless anodised (or RAL 9006)	

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ENTRANCE FACADE	core and PVB opacifier layer	
CURTAIN WALL SYSTEM	Aluminium	Colourless anodised (or RAL 9006)
CURTAIN WALL FRAMING	Aluminium sheet	Colourless anodised (or RAL 9006)
FLASHINGS	Steel sheet / Aluminium	Pure White RAL 9010 Colourless anodised
PARAPET COVERING	Aluminium	Pure White RAL 9010
DOORS, HATCHES AND FRAMES		
EXTERIOR DOORS	Coated steel or aluminium	Steel: metallic light grey RAL 7035.
OVERHEAD DOORS	Coated steel or aluminium	Steel: Dark Blue 7686 C Aluminium: colourless anodized. Alternative: standard colour, approval by Engineer.
EXTERIOR WINDOW FRAMES	Coated steel or aluminium	Colourless anodised
LOUVRES	Coated steel or aluminium	Colourless anodised Matt or RAL 9006
IRONMONGERY	Stainless steel or aluminium	Colour of material
ROOF		
ROOF MEMBRANE	white or light color	Colour of material
FALL ARREST SYSTEM	Stainless steel	Colour of material
SAFETY RAILINGS	Galvanized steel	Colour of material

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STEEL PLATFORMS, STAIRS, RAILINGS	Galvanized steel	Colour of material	
ROOF HOODS, DOG HOUSES	Insulated sandwich panels	Pure White RAL 9010 or Light grey RAL 7035	
SUPPORTING STEEL STRUCTURE CHIMNEYS	Galvanized steel	Colour of material	
MISCELLANEOUS			
DOWNPIPES	Powder coated aluminium	Match colour of exterior wall	
CAGE LADDER	Galvanized steel	Colour of material	
ROOF WALKABLE MEMBRANE	TPO, same membrane of the roof	Light grey	Maintenance walk path on the roof
STEEL FRAME DOWNPIPES	Galvanized steel	Match colour of exterior wall	
JOINT SEALANTS	Matching window frames	Pure white / transparent	
DOCK SHELTER	Plastic membrane	Black / dark grey	
JIB CRANES	Coated steel	Mid grey (standard color)	

1.12. Interior colours

ELEMENT:	MATERIAL:	COLOUR:	REMARKS:
MAIN STRUCTURE			
STEEL COATED	Paint coat on steel	Light grey RAL 7035	
STEEL FIRE PROTECTED	Fire resistant coating on steel	Light grey RAL 7035	
FIRE BOARDING	Panel material painted	Light grey RAL 7035	

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PRECAST CONCRETE STRUCTURE	Fair-faced concrete	Colour of material	
PRECAST CONCRETE STRUCTURE	Fair-faced concrete and painted	Light grey RAL 7035	
SUPPORTING STEEL FRAMES FOR WINDOWS AND DOORS	Paint coat on steel	Light grey RAL 7035	
SUPPORTING STEEL FRAMES FOR SANDWICH PANEL ELEVATIONS	Paint coat on steel	Light grey RAL 7035	
FLOORS			
STEEL GRID FLOORS	Galvanized steel	Colour of material	
ANTI-DUST PAINT	Self-leveling epoxy screed in aqueous dispersion for concrete floorings	Light grey RAL 7035	AD-01
CERAMIC FLOOR TILES – WET AREAS	600x300mm	210 RL	FT-01
CERAMIC FLOOR TILES – CUSTOMER AMENITIES AND KITCHEN, LOBBY	1200x600mm	206 V	FT-02
CARPET FLOOR TILES	Milliken Nordic Stories Isograd IGD79-133 Dark Dansk or equivalent		CP-01
CARPET FLOOR TILES – CONFERENCE ROOM / MOTHER'S ROOM	Milliken Formwork 2.0 Blueprint or equivalent		CP-02
WALK-OFF-MATT	EMCO Diplomat / Marschall or equivalent	Standard color, black	CP-03
LIFT CAGE	Chequered plate stainless steel (or aluminium)	Colour of material	
WALLS			

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WALL PAINT TECHNICAL ROOMS	Water based wall paint	Signal white RAL 9003	Dust free
WALL PAINT CORRIDORS	Water based wall paint	Light grey RAL 7035	Dust free
WALL PAINT WHITE SPACES	Water based wall paint	Light grey RAL 7035	Dust free
WALL PAINT OFFICE AREAS AND CUSTOMER AMENITIES	Water based wall paint	Signal white RAL 9003, Vantage colors	Dust free
WALL PAINT RESTROOMS/SHOWER	Water based wall paint	Signal white RAL 9003	Water-resistant / fungus-free
WALL PAINT OFFICE AREAS, CUSTOMER AMENITIES	Water based wall paint	Signal white RAL 9003 Vantage Blue RAL 5005 Vantage Green RAL 6033 Vantage Grey RAL 7016	Dust-free
ALUMINIUM CHEQUER PLATES WALL PROTECTION	Factory coated aluminium	Material colour or Signal white RAL 9003	
CERAMIC WALL TILES	300X600mm	Matt and shiny	WT-01, WT-02
LIFT CAGE WALLS	Stainless steel, brushed	Colour of material	
WIRE MESH / PERFORATED PANEL WALLS DATA HALL	Coated	Mid grey	
SKIRTING – ALL TECHNICAL ROOMS, CORRIDORS, STORAGES	Johnsonite Traditional Vinyl 4” .080	40 Black	
SKIRTING – OFFICES, LOBBY, AMENITIES, BREAK AREAS	Johnsonite Millwork Equinox 4 1/2 “100 mm	40 Black	

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SKIRTING – ALL TILED FLOORS IN WET AREAS	Tiled skirting with stainless steel profile on top	Where there is no wall tiling – skirting the same as the floor tiles	
DOORS AND DOOR FRAMES			
INTERIOR CURTAIN WALL FRAMES	Aluminium	Clear anodized	
DOORS	Steel / aluminium	RAL9010	
DOORS	Wood / melamine HPL	RAL9010	
DOOR FRAMES	Steel / aluminium	RAL9010	
GLAZING IN DOORS	Clear	No colour	
OVERHEAD DOOR AND ROLLER SHUTTER DOORS	Coated steel or aluminium	Steel: Dark Blue 7686 C Aluminium: colourless anodized.	
IRONMONGERY	Stainless steel or aluminium	Colour of material	
LIFT DOORS AND FRAMES	Stainless steel, brushed	Colour of material	
WALL PROTECTION IN CORRIDORS			
CORNER PROTECTION	Metal angels, CS Acrovyn	#4 Satin Finish, same as colour of the wall.	
CEILINGS			
CONCRETE CEILING PAINT TECHNICAL ROOMS	Water based ceiling paint	Signal white RAL 9003	Dust free
CONCRETE CEILING PAINT CORRIDORS	Water based ceiling paint	Signal white RAL 9003	Dust free
CONCRETE CEILING PAINT WHITE SPACES	Water based ceiling paint	Signal white RAL 9003	Dust free
SUSPENDED BAFFLES CEILINGS	Ceiling baffles and framework	Light grey	
SUSPENDED HYGIENIC CEILINGS	Panels and framework	White RAL 9003 /RAL 9010	

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	(Ecophon Hygiene Performance T15)	
SUSPENDED MINERAL ACOUSTIC CEILINGS	Panels and framework (Ecophon, Rockfon Blanka DB 35, T15)	White RAL 9003 /RAL 9010
WHITE SPACE SUSPENDED CEILING	Powder coated	Singla white RAL 9003
WHITE SPACE STRUCTURAL CEILING GRID	Painted	Signal white RAL 9003
MISCELLANEOUS		
PRECAST CONCRETE STAIRS	Concrete	Colour of material
STEEL RAILINGS OF MAIN STAIRS	Coated steel	Traffic grey RAL 7042 Colour of material
LADDERS	Coated steel	Traffic grey RAL 7042
STEEL STAIRS TECHNICAL ROOMS	Galvanized steel	Colour of material
STEEL STAIRS IN STAIRCASE	Coated steel	Traffic grey RAL 7042
RAILINGS STAIRS TECHNICAL ROOMS	Galvanized steel	Colour of material
STEEL FLASHINGS FOR BLOCKWORK WALLS	Coated or fire boarded steel	Colour of wall
STEEL SUPPORTS IN BLOCKWORK WALLS	Coated or fire boarded steel	Colour of wall
SCISSOR LIFTING PLATFORM	Coated steel	PC-9 Light blue RAL 5012
INSIDE VERTICAL BLINDINGS	Woven material	White/pearl

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1.13. Daylight access

Daylight requirement is 1/8 of the floor area for each room with workplaces according to the definition of the occupational health and safety rules.

All working spaces (offices) are equipped with windows for natural daylight, according to local regulation, and openable windows only for natural smoke extraction in case of emergency operation by Fire Brigade (fire local regulation requires openable windows as min. 1/40 of the office area to allow Fire Brigade to free the space from the smoke after a fire event). Fresh air is given artificially to all the office rooms.

1.14. Sampling

Sampling of various works and components for the erection of the data centre. See paragraph *1.11 Exterior colours* and *1.12 Interior colours*. The sampling includes all samples to be released by the Contractor and approval by the Engineer/Employer.

Samples shall be submitted for review of kind, colour, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual components as delivered and installed. All required samples shall be produced or submitted by the Contractor for approval by the Engineer/Employer, in enough time before the start of the work.

The items listed below are to be included in the sampling:

- Prefab concrete stair
- Floor finishes
- Wall finishes
- Ceiling finishes
- Paints
- Curtain walls, doors and windows, including ironmongery
- Partitions
- Expanded metal mesh panels

The above-mentioned samples shall be completely dismantled and disposed of by order of the Contractor, including removal and all disposal fees incurred. This does not apply to the fair-faced concrete sample surfaces; these shall be carried out on walls that can later be plastered over.

1.15. Mock-ups

Before installing portions of the Work requiring mock-ups, build mock-ups for each form of construction and finish shall be required to comply with the following requirements, using materials indicated for the completed Work:

- Build mock-ups in location and of size indicated or, if not indicated, as directed by Engineer.
- Notify Engineer seven days in advance of dates and times when mock-ups will be constructed.
- Demonstrate the proposed range of aesthetic effects and workmanship.
- Obtain Engineer's approval of mock-ups before starting work, fabrication, or construction.
- Allow seven days for initial review and each re-review of each mock-up.

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- Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed Work.
- Demolish and remove mock-ups when directed, unless otherwise indicated.

Mock-ups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples.

The Contractor shall provide for mock-ups of the following systems.

- Exterior Building Façade (2 full elements)
- Each type of air-cured fibre cement façade element, including fixation, etc.
- Each type of cladding and or sandwich panel, including fixation, flashing, etc.
- Each type of louvres
- Exterior aluminium curtain wall / window frame system with glass and entrance door, including aluminium openable (for emergency) window in the curtain wall system
- Roofing assemblies to exactly match existing roofing assemblies (1000 x 1000 mm2)
- Membrane roofing assembly, including upstands, footings, etc.
- Lighting fixtures
- Finish carpentry (2000 x 2000 mm2)
- Finishes, painting, wall coverings, skirting, etc. (full height, 2000 mm width)
- Signage (out of designer scope, to be provided by Signage Specialist Designer)
- Flooring materials and floor finishes for confirmation of aesthetics, durability, and mark resistance (2000 x 2000 mm2)
- Floor coating (2000 x 2000 mm2)
- Ceiling System (2000 x 2000 mm2)
- Wall partitions, (full height, 2000 mm width, minimum of 4 m^2):
    - Dry walls and block work walls
    - Glass partitions
    - Precast / in-situ concrete walls
    - Perforated metal partition walls
    - Penetration Fire Stopping works
- Sanitary:
    - One wet area fully tiled, painted, and sanitary installed
    - Cubicles

1.16. Submittal Procedures

A schedule of submittals shall be submitted, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to

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submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

Allow time for submittal review, including time for re-submittals. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.

Allow 14 days for initial review of each submittal by the Engineer/Employer. Allow additional time if coordination with subsequent submittals is required. Allow 14 days for review of each re-submittal. Collect information into a single submittal for each element of construction and type of product or equipment.

Include the following information, as applicable:

- Relevant Manufacturer's catalogues.
- Relevant Manufacturer's product specifications.
- Standard colour/finishing charts.
- Statement of compliance with specified referenced standards.
- Application of testing agency labels and seals.
- Sample for review colour, pattern, and texture.
- Indicating types of products required for the Work and their intended location.
- Warranties.

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2. Material specification

All products shall be CE marked, following European Regulation n° 305/2011:(Construction Products Regulation, or CPR).

On-site material checks, following Decreto Ministeriale 17 gennaio 2018 - Aggiornamento delle "Norme tecniche per le costruzioni" (NTC 2018) - Capitolo 11 "Materiali e prodotti per uso strutturale" (§ 11.1).

2.1. Ground works

2.1.1. General

The following soil surveys/ geotechnical report have been carried out:

- Geological Report / Relazione geologica – L22 – geol. Simone Scarabelli
- Geotechnical and Seismic Report / Relazione geotecnica – L22 – geol. Simone Scarabelli
- Local Seismic Response Report / Relazione di risposta sismica locale – L22 – geol. Simone Scarabelli

These reports describe their fieldwork, soil and groundwater tests, analyses and recommendations for execution of earthworks, construction works, environmental soil and groundwater handling as well as foundation type.

2.1.2. Excavation of soil

The demarcation, earth movements (volume, area etc.). maintenance and backfilling of the construction pit, the compaction and preparation of the sole for the placement of foundation slabs, pad and lift shafts falls within the responsibility of the contractor and is to be closely discussed and approved by the geotechnical engineer and Employer. All of the above is to be fully included in the offer.

Different soil types shall be excavated and stored separately.

All artificial fillings and loam layers shall be removed up to the bearing sand/gravel layers.

Nearby existing pipes, cables, etc. excavations shall be done manually.

Excavations for pipes and cables shall be done until the bottom side of pipes and cables.

Treatment of existing soil:

The upper surface layer (layer R) is approx. 1.50-2.00 m thick and mainly consists of mixed backfill soils. Directly below layer R, is encountered a level consisting mainly of sandy silt approx. from 1.50-2.00 m to 2.50-6.00 m and another level consisting of silty sand approx. from 2.50-6.00m to 4.00-7.00m.

Since our excavation level will be around 1.70m below ground level and the water table level was found at an average depth of 2.30m, there are no geotechnical prescriptions about compacting the existing layers of soil. For any structural design prescription, please refer to *Structural Statement of Requirements*.

Further/additional Information are available in the geotechnical reports.

2.1.3. Backfilling

Sand layer as back fill from the bottom of excavated building excavation up to the bottom of the ground floor and foundation slabs.

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Layer thickness (m): maximum 1.0 m. Return soil types that have been kept separate to their original places wherever possible.

Sand that requires delivery (in case it is not available from work activities); a clean soil certificate shall be submitted.

Degree of compaction per layer: See advice in *Structural Statement of Requirements*.

2.1.4. Lean concrete layer

Lean concrete layer as base layer for the concrete foundation slabs and for the industrial floors. Layer thickness: 50-100 mm.

2.1.5. Forming and Dewatering of the construction pit

Groundwater level, measured in September 2025, is variable between -2.50 m to -1.50 m bgl.

The work in the construction pit shall be carried out in dry conditions, in order to guarantee the quality of the excavation, backfilling, gravel foundation layer, and concrete works. Remediation of loam layers in the area can require sheet piling and deeper dewatering. The Contractor shall take measures to remove and dispose soil and water in the construction pit in accordance with the applicable regulations regarding contamination and dewatering (such as groundwater drainage with point pumping system).

Groundwater drainage with point pumping system is required for the excavations of the freight elevator pits and for the lamination tanks, since the excavations are deeper than the water table level.

The costs of these provisions shall be included in the price quotation.

All measures are indicated in the geotechnical report and are to be fully included in the offer.

2.1.6. Concrete screed floors

Thickness of concrete screed floors: according to drawings.

The concrete screed shall be designed by the contractor to be crack free. This will require reinforcement to prevent shrinking cracks, decoupling of the screed from the base floor by an appropriate foil layer and making strategic expansion joints with flexible sealant. The screed design shall be presented to the Engineer for approval before execution.

- Floor flatness according to paragraph *1.10: Level requirements floors*.
- Concrete quality: C30/37
- Reinforcement: bars Bst 500, ductility class B
- Reinforcement: mesh Bst 500, ductility class A
- Including all necessary pre-treatment materials and layers
- Including hard gravel top-layer additives in case necessary to obtain strength class
- Monolithically finishing

Scope:

- As indicated on the drawings and the finishing materials schedule

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2.2. Masonry works

2.2.1. General

The Contractor shall prepare sample walls of the blockwork walls, for approval by the Employer and/or Engineer (in case wall types are applicable):

- Cellular concrete blocks, 4 m2, including skim coat finishing
- Cellular concrete panels, 4 m2, including paint coating or skim coat finishing

The Contractor shall submit the following items to the Employer and/or Engineer, for approval:

- Product data sheets cellular concrete blocks, glue-mortar and skim coat material;
- Product data sheets cellular concrete panels, including joint filling materials and fixations and skim coat material
- All other materials which will be used and installed such as anchors, strips, foam-tape;
- Certificates (from the manufacturer/supplier) proving the fire resistance of the walls;

Only undamaged blocks shall be installed. Smaller fitting blocks shall be made with appropriate cutting or sawing machines.

Maximum deviation for walls 5 m length or shorter: 8 mm

Maximum deviation for walls over 5 m length: 12 mm

Maximum deviation in any 2.5 m height of wall: 8 mm

Applicable standards and rules:

- UNI EN 1996-2:2006 - Eurocodice 6 - Progettazione delle strutture di muratura - Parte 2: Considerazioni progettuali, selezione dei materiali ed esecuzione delle murature
- EC 1-2011 UNI EN 1996-2:2006 - Eurocodice 6 - Progettazione delle strutture di muratura - Parte 2: Considerazioni progettuali, selezione dei materiali ed esecuzione delle murature
- UNI EN 15254-2:2009 - Applicazione estesa dei risultati da prove di resistenza al fuoco - Pareti non portanti - Parte 2: Blocchi di gesso e muratura
- UNI EN 998-2:2016 - Specifiche per malte per opere murarie - Parte 2: Malte da muratura
- UNI EN 771-4:2015 - Specifica per elementi per muratura - Parte 4: Elementi di calcestruzzo aerato autoclavato per muratura

2.2.2. Cellular concrete block walls

Mixes of cement conglomerate with selected grain sizes, to be made with patented procedures of vibration and compression and have the following minimum mechanical physical characteristics:

Specific weight 6.00 kN / mc

Average compressive strength on samples 4.50 N / sq mm

Flexural strength 0.89 N / sq mm

Modulus of elasticity on specimens 2600 N / sq mm

Drying shrinkage 0.033 mm / m

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Characteristic value at rupture due to compression on the masonry 3,3 N / sq mm

Characteristic value at rupture for shear on masonry 0.22 N / sq mm

“Admissible” compressive strength on masonry 0.75 N / sq mm (according to EN 771-4)

The previous physical characteristics can be demonstrated through certifications containing results of the tests and conducted by official laboratories in the production plants, in the manner prescribed by the current legislation.

The products are considered at the time of supply; the Works Supervisor (Direttore dei Lavori) for the purpose of their acceptance can carry out checks (even partial) on samples of the supply or request a certificate of compliance with prescriptions. In the event of a dispute, it is understood that the sampling procedures, the test methods and the evaluation of the results are those indicated in the UNI standards in force.

Walls shall be R/EI 60 certified following UNI EN 1363-1-2-3, as indicated on the drawings.

All blockwork walls, steel supporting columns, lintels, fixations, anchors, U- and L-shape flashings, reinforcement, expansion joints, pre-compressed foam tapes, insulation material, shall be indicated on workshop drawings by the Contractor.

Cellular concrete block non-stuctural walls will be designed according to seismic hazard: Strategic buildings class IV - ag/g = 0,074, ground cathegory C-T1, according to Italian Regulation “D.M. 17/01/2018 - Aggiornamento delle Norme tecniche per le costruzioni”.

Scope:

- Data Hall walls, technical shafts walls, technical rooms walls and other non-structural partitions as indicated on drawings.

2.2.3. Openings in cellular concrete block walls

Openings in internal walls made of cellular-concrete-blocks, thickness 150 mm.

Openings including all supporting structures such as concrete lintels and reinforcement.

Openings and other provisions for technical installations shall be defined by the Contractor and shall be included in the price.

2.2.4. Supporting steel elements for blockwork walls

Supporting steel elements for blockwork walls shall be delivered and installed by the Contractor.

Supporting steel elements:

- Steel columns (HE-A or IPE), for strengthening of block work walls with large dimensions (height and length of the blockwork walls).
- U-shape bended steel sheets, for fixation of block work walls to steel columns and sandwich panel or other type of elevations.
- L-shape bended steel sheets, for fixation of block work walls to upper steel structures and concrete ceilings.

Steel quality shall be minimal S235.

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Finishing of supporting steel elements shall be same as finishing of steel structures:

- Fire resistant coating or boarding 60 minutes same as fire resistance of the wall, where required.
- Coated / painted in case no fire resistance is required. Including:
  - Fixation with spread anchors, bolts and nuts, pop-rivets, etc. Welding on site shall not be allowed.
  - Non-combustible (pre-compressed) foam tapes or mineral wool insulation material.
  - Non-combustible joint sealants for airtightness.
  - Fire-resistant joint sealants for fire resistance.

All elements and fixation bolts, nuts, etc. corrosion protected.

Fixation of the supporting steel elements to the main steel structure shall be without impermissible damaging of the fire-resistant coating of the main steel structure.

Note:

- Alternative for the U-shape and L-shape bended steel sheets are steel anchors, mineral wool filling material and fire-resistant joint sealants as indicated on the typical details drawings as prepared by DBA.

Steel columns (only if applicable due to dimensions (length, height, thickness) of blockwork walls):

- Vertical steel I-shape columns with sheet plates at the bottom side and a flexible steel angle (provided with long hole to prevent vertical loads) at the top side.
- Columns shall be fixed with bolts, nuts and spread anchors to the floors and roofs of the building.
- Distance between the flanges of the I-shape columns: thickness of the blockwork wall + approx. 5 mm.
- Mineral wool insulation material, thickness 10 / 20 mm, shall be installed between the steel beams and the front ends of the blockwork walls.

U-shape bended steel sheets:

- Vertical to be installed U-shaped steel sheets over the total height of the blockwork walls.
- U-shaped steel sheets shall be fixed with bolts, nuts, spread anchors, pop-rivets, etc.
- Distance between the flanges of the U-shaped steel sheet: thickness of the blockwork wall + approx. 5 mm. Height of the bended edges: 50 mm.
- Steel sheet thickness: 3 mm.
- Foam tape shall be installed between U-shape flashings and building elements.
- Mineral wool insulation material, thickness 10 / 20 mm, shall be installed between the L-shape steel sheets and the front ends of the blockwork walls.

L-shape bended steel sheets:

- Horizontal to be installed L-shape steel sheets over the total length of the blockwork walls, on both sides, for horizontal support of the blockwork walls at the top sides.
- L-shaped steel sheets shall be fixed with bolts, nuts, spread-anchors, pop-rivets, etc.
- Steel sheet thickness: 3 mm.

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- Dimensions of the L-shaped steel sheets: 50 x 50 x 3 mm^3.
- Foam tape shall be installed between L-shape flashings and building elements.
- Mineral wool insulation material, thickness 10 / 20 mm, shall be installed between the building elements and the front ends of the blockwork wall.

Alternative: spread anchors (shall be calculated), joint to be filled with mineral wool and to be finished on both sides with fire resistant joint sealant. Including certificates.

Scope:

- Supporting steel elements necessary for the construction and fixation of blockwork walls.

2.3. Carpenter's work

2.3.1. Fire resistant boarding

Fastening of fire-resistant boarding on special framework with stainless or corrosion protected screws or staples.

Edges: right angles, chamfered edges.

Thickness (mm): shall be defined by the Contractor, based on the brand and the required fire resistance, and the dimensions (area, volume) of the steel beams and steel columns. Fire resistance shall be proved with certificates by the Contractor.

Fire-resistance: as defined by the Engineer and/or local building regulations.

Fire resistance of fire-resistant boarding on steel subframes shall be minimal the same as the fire resistance of the wall.

Reference brand: Promat (Promatect H), Rockwool, Knauf, Gyproc or equivalent.

Scope:

- Bottom side of curtain wall mullions at floor level.
- Steel subframes for doorframes and large wall openings in fire resistant gypsum board walls.
- Support steel for precast concrete platforms and stairs.

Alternative: Fire resistant boarding in the form of special fire-resistant gypsum board, to be installed by the same company as the gypsum board walls. Including certificates for minimal required fire resistance.

2.3.2. Temporary covering of floor and roof openings

Floor and roof openings for technical shafts or openings in platform that are not yet to be built shall be closed with wooden structures for safety reasons.

Wooden beams of construction-wood, dimensions approx. 60 x 160 mm2, c/c 600 mm.

Water-resistant plywood, thickness 18 mm.

Wooden beams to be attached to concrete structure by means of hot-dip galvanised steel lugs.

Fastening plywood to wooden beams with nails and/or screws according to standard carpentry workmanship.

Live load: 4 kN/m2.

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Note: Wooden coverings are not shown on the drawings.

Scope:

- Temporary closing of floor openings to prevent that people and/or goods from falling down.
- Roof openings that are not directly covered by the final cover or doghouse.
- Openings in technical platforms.

2.3.3. Steel support frames for door frames in gypsum board walls

Door frames in gypsum board walls shall be supported by a steel support frame consisting of vertical and horizontal rectangular steel tubes, dimensions approximately 100 x 100 mm2, wall thickness 6 mm, or larger dimensions if required.

Excellent corrosion protection according to EN ISO 12944, Class C1.

Steel with an alkyd coating in one layer:

Primer layer 60 µm.

Finishing coatings shall be applied according to the prescriptions of the manufacturer/supplier.

Steel support frames to be fixed to the concrete and/or steel structure with expansion or chemical bolts/anchors.

Top side fixations with slotted holes to prevent vertical loads on the steel support frames.

Steel support frames shall be easily adjustable in height due to different locations and slope of roofs.

Steel support frames shall be covered with fire boarding or special fire-resistant gypsum board: minimal fire resistance same as fire resistance of the wall. See paragraph *Fire resistant boarding* in Architectural SoR.

Bottom horizontal element shall be dismountable with bolts and nuts.

Scope:

- Wall openings for double swinging doors in gypsum board walls.
- Wall openings for single swinging doors in gypsum board walls in case walls are higher than 4 meters.

Note: Steel support frames not required for single swinging doors of office and meeting rooms, sanitary rooms, showers, cleaning rooms, in case the required strength/stiffness can be reached with the standard metal framework of the gypsum board wall.

2.3.4. Ramp and steel stairs hot dipped galvanized, external

The steel stairs consisting of main steel beams, support beams for the landing platforms, steel columns, treads of steel grating and tubular sections for balusters and railings.

Emergency stairs: Steel quality: S355, Execution class EXC3 according to UNI EN 1090-2

Ramps and baluster: Steel quality: S235, Execution class EXC2 according to UNI EN 1090-2

Type of stairs: straight-run stairs, with landings as indicated on the drawings.

Stairs height: according to architectural drawings.

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Riser (mm): according to architectural drawings.

Going (mm): according to architectural drawings.

Overlap (mm): minimum 40 mm.

Steps and platforms consisting of hot dipped galvanized gratings, minimal thickness 30 / 40 mm. The grating elements fixed with steel angles to the stair beams and landing platform structure.

Railings and/or handrails shall be provided on both sides of the stairs and on 2 or 3 sides of platforms as indicated on the drawings.

For railings, balusters and handrails see the architectural Statement of Requirement. Dimensions according to drawings, national and local regulations.

Note: Steel stairs on roof shall be fixed to steel platforms. Free space between bottom stairs and roof covering approximately 50 mm. No connections with roof structure / membrane is allowed.

Hot dipped galvanised steel elements shall be cleaned from sharp edges and zinc whiskers/flakes before installation.

Excellent corrosion protection performance according to EN ISO 14713, Class C4.

Scope:

- External steel emergency stairs, ramps and baluster.

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2.4. External frames, windows and doors

2.4.1. General

Loads:

Withstands loads and thermal and structural movement requirements without failures:

- Air infiltration, see also paragraph *1.9 Airtightness of walls and roofs*
- Water penetration is not allowed.
- Wind Loads: Provide doors and door frames, including anchorage, capable of withstanding wind-loads, according to regional and national regulations.

Insulation value doors and doorframes shall be according to table in paragraph 1.6 Insulation values and insulation materials.

The Contractor shall hand over following items to the Employer and/or Engineer for approval:

- Product data for each product specified, including details of construction regarding materials, dimensions of individual components, profiles, and finishes.
- Samples of door and window frame types, length 300 mm, including coatings.

External doors for materials transport shall not be provided with thresholds (or any other upstanding edges) which will hinder the material transport.

Aluminium door frames are for people transport only.

For material- and other kinds of transport steel doors shall be applied.

Master key plan system to be included in the package of the contractor.

2.4.2. External frames, windows and doors general

Minimal clear dimensions of door frames (width x height in mm^2):

- Corridors (logistic): single: 900 x 2400mm2
  double: 1800 x 2650-2800 mm2
- Escape routes: 900 x 2200-2400 mm2
- Office and toilet 900 x 2200 mm2
- Technical and data module: single (EEO - emergency exit only): 900 x 2200 mm2
  double (material path): 1800 x 2800 mm2

Notes:

Clear dimensions shall be measured at the inside of the door frames; the opening through which transport of people and goods shall take place. Minor deviations, due to the brand/type of the window and door frames, are allowed: maximal 15 mm per post or mullion.

For windows, please refer to technical drawings and schedules. All the openable windows must be provided according to fire regulation (smoke extraction function) and will be operated according to the fire detection system of the building, only in case of emergency, as smoke out windows.

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2.4.3. Aluminium door frames and doors

Thermally insulated extruded aluminium profile frame.

Profiles with fiber-glass reinforced polyamide insulator.

Dimensions (mm): according to the drawings.

Sill and threshold profiles:

- Profile type: flat profile.
- Insulator: fiber-glass reinforced polyamide.

Material: aluminium alloy AlMgSi 0.5 6063 F22.

Water drainage: concealed system.

Surface treatment: colourless anodised, corrosion class 3.

Including coated and/or stainless-steel sheets, steel supports and insulation for external threshold finishing, as indicated on the drawings.

Insulation value door constructions shall be according to table in chapter 1.6 Insulation values and insulation materials.

Accessories shall include sealing equipment, flexible EPDM profiles, fixtures and fittings, concealed door bottom seal, system related hinges and locks, fastenings (corrosion-proof steel), etc.

Fire resistance for doors and doorframes as indicated on the drawings.

Reference brand names: Hörmann, Schüco, Raico, Novoferm

Scope:

- Aluminium doors and door frames as indicated on the drawings.

2.4.4. Steel door frames and doors

External doors and door frames shall be made of steel, corrosion protected, and powder coated.

Door and door-frames construction shall be thermally insulated.

Profiles with fiber-glass reinforced polyamide insulator.

Including coated and / or stainless-steel sheets, steel supports and insulation for external threshold finishing, as indicated on the drawings.

Insulation value door constructions shall be according to table in chapter 1.6 Insulation values and insulation materials.

Self-closing and fire resistance doors and doorframes as indicated on the drawings and according to the local codes.

Dimensions (mm): according to the drawings.

Panels shall be executed as sandwich panels (sheet – insulation material – sheet).

- Surface treatment: powder coated (epoxy-polyester) or painted (primer and paint-layer).

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- Factory powder coated minimum layer thickness 90 µm.

Painted: minimal layer thickness primer 40 µm, minimal layer thickness finishing layer 60 µm.

Accessories shall be included, sealing equipment (flexible EPDM profiles), fixtures and fittings, concealed door bottom seal, system related hinges and locks, fastenings, corrosion-proof steel, etc.

Reference brand: Jansen, Novoferm, Hörmann.

Scope:

- Steel doors, door frames as indicated on the drawings

2.4.5. Fire resistant window and door frames and doors

Same as steel door frames and doors, as described in paragraph *Steel door frames and doors*, but with additional fire resistance and smoke tightness as indicated on the drawings.

Door panels, as described in paragraph 2.4.6 Door panels for aluminium and steel doors, but with additional fire resistance and smoke tightness as indicated on the drawings.

Fire resistance and smoke tightness of doors according to regulations, fire protection conditions and drawings.

Note: Allowed alternative to fire resistant steel window frames are fire resistant aluminium window frames.

Scope:

- Doors and windows in external facades, as indicated on the drawings.

2.4.6. Door panels for aluminium and steel doors

Door panels: inside- and outside sheet electrolytic galvanized steel, coated and corrosion protected, insulation shall be mineral wool.

Aluminium panels: Surface treatment: colourless anodised, corrosion class 3.

Steel panels: Surface treatment: powder coated (epoxy-polyester) or painted (primer and paint-layer):

- Factory powder coated minimum layer thickness 80 µm.
- Painted: minimal layer thickness primer 40 µm, minimal layer thickness finishing layer 60 µm.

Colour as indicated in paragraph 1.11 Exterior colours.

Insulation value total door construction shall be according to table in chapter 1.6 Insulation values and insulation materials.

Fire resistant panels shall be provided where indicated on the drawings and according to local regulations.

Ventilation louvres shall be fitted in exterior door panels in technical rooms, where applicable.

Scope:

- Door panels in aluminium and steel doors as indicated on the drawings.

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2.4.7. Ventilation louvres

Ventilation louvres in external and internal walls shall be made of steel or aluminium in same finishing (powder coated, not painted) and colour as external doors and/or door frames.

The pressure-drop over the louvres shall be maximal as indicated below.

Louvres shall be rainwater drop tight (only valid for external) and provided with secure wire-mesh (13x13mm2, according security requirements).

Louvres shall be drained internally through hollow section vertical mullions which shall discharge water onto the threshold (only valid for external).

Including support frames where necessary.

Performance requirements:

Louvre to incorporate an aerodynamically efficient blade profile creating tangential separation of water in the airflow. Louvre blades to include front lip gutter and multiple secondary gutters designed to catch and direct water through multiple channels in jambs and mullions to cill for effective drainage. The system, when tested in accordance with the principles of BS EN 13030:2001, to be designated as Class A3 and to achieve a minimum Discharge Loss Coefficient of 0.289 and a Penetration Class A up to 3.0 m/s.

Natural ventilation and pressure release for Electrical HV / LV rooms / Generator set rooms

Manufacturer (reference brand)	Construction Specialities
Type	CS RSH-5700 Rain Defence Louvre.
Arrangement	Horizontal single bank louvre with complex extruded blade profile to providing tangential separation.
Material	All components to be one-piece members extruded from aluminium alloy 6063-T6 (heads, sills, jambs, and mullions to be min. 1.91 mm, blades to be min. 1.52 mm). Powder coated 90 µm.

Fabrication:

Individual louvre modules to be mechanically assembled in the factory using stainless steel or aluminium fasteners. Installation of multiple module elevations to be facilitated by interlocking mullions. Supplied with approx.100 mm high by full depth aluminium sill flashings with welded side panels.

Installation:

- Louvre to be installed by competent installer, strictly in accordance with manufacturer's instructions, back to supporting structure (by others) to suit design wind load.
- Louvre sections covering the generator intakes shall be removable for maintenance access
- Louvred doors to be dimensioned according to the drawings. Manufacturing details by the supplier.
- Louvers in the outside facade of the HV/LV/power intake rooms shall be "stick putting through" safe.

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Notes:

- Fire resistance dampers/blocks (if applicable) shall be provided / installed by MEP-contractor.
- Louvres can also function as explosion pressure release outlets.

Reference brand: CS Louvres, type RSH-5700 Rain Defence Louvres. Renson/Storax. Lafiro type LWKF or equivalent.

Scope:

- All louvres in elevations, as indicated on drawings.

2.4.8. Door ironmongery, exterior

Master key plan system to be included in the package of the contractor.

Hinges: All doors shall be hung on four stainless steel hinges per door; the hinges concealed in the profiles. Doors for persons minimal three hinges per door. Hinges shall be adjustable.

Locks: All doors shall be fitted with Euro profile mortise locks; the locks are solenoid controlled (single or double). A stainless-steel cover plate and varnished steel lock casing: mortise door locks with cylinders for the outer doors.

Locks shall be provided with day- and night-latch.

All doors shall be provided with a mechanic cylinder minimal RC2, where indicated on the drawings (including emergency exit doors).

Emergency exit doors shall be provided with emergency (panic) locks and shall be free open-able from the inside (without the use of keys), handle or fixed knob on the outside.

Handles: The door handles and plates shall be in anodized aluminium or stainless steel (EN 1.4401).

Access control: All exterior doors with access control as indicated on the drawings, shall be provided with the necessary electrical connections for electrical and magnetic locks. Please refer to door schedule and to Security Package.

Door closers: External doors for persons, self-closing doors as indicated on the drawings, and all self-closing doors according to local regulations, shall be provided with door mechanic closers, sliding or rotatable arm type. Strength shall be defined on basis of weight and function of the applicable door.

Cylinders: Mechanic cylinder minimal RC2 stainless steel finish, on all lockable doors.

Cylinders shall be Master-keyed on a 3-level system.

Door furniture shall be in a quality for non-residential buildings and shall be made of anodized aluminium or stainless steel (EN 1.4401).

Door-closer with holding (open) position for outside door or automatic door opener (electrically operated) ad indicated on the security drawings and door schedule.

Outer doors of generator set rooms that turn to the outside and are escape doors should be fitted with door closers with no or little resistance when the door is opened (due to the negative pressure in the room of approximately 100 Pa). Please refer also to OFCI Package.

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Reference brand names: Assa Abloy, Abus, Schüco.

Scope:

- All exterior doors with the locks, handles, knobs and cylinders as indicated on the door and window schedule drawings.

2.4.9. Exterior window frames

Thermally insulated extruded aluminium profile frame. Refer to paragraph 1.6 Insulation values and insulation material.

Profiles with insulation, frames shall be completely weather-resistant.

Fixings and connections shall not have/cause thermal bridging.

Sound absorption to be according to paragraph 1.7 Fire safety requirements.

Airtightness shall be as described in paragraph 1.9 Airtightness of walls and roofs.

Frames to support load of double glazing.

Dimensions (mm): according to the drawings

Material: aluminium alloy AlMgSi 0.5 6063 F22.

Water drainage: concealed system.

Surface treatment: factory powder coated minimum layer thickness 90 µm.

Accessories: all sealing equipment, flexible profiles, fixtures, fittings, etc. All fixtures and fittings to be corrosion resistant.

Including all interior and exterior windowsill flashings, plywood sill elements, foam tape seals, DPC, etc.

Glazing shall be gas filled, high efficiency insulated double or triple glazing, to comply to local and national regulations. Glazing shall be installed from the interior of the building.

Glazing shall be equipped with opaque film for granting the privacy or spandrel glass.

Reference brand names: Schüco or equivalent.

Scope:

- Exterior window frames as indicated on drawings.

2.4.10. Water resistant plywood

Thickness: 18 mm.

Surface front- and backside: factory paint finish.

Accessories: all sealing equipment, flexible profiles, fixtures, fittings, etc. All fixtures and fittings shall be corrosion resistant.

Plywood shall be painted according to chapter *Paintwork water resistant plywood*.

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Reference brand: Fetim Professional; type UniPrime.

Scope:

- Water resistant plywood is indicated on the drawings.

2.4.11. Burglar resistance

The burglar resistance class of all elevation elements, components, materials (such as facades, doors, doorframes, windows, louvres, etc.) shall be class RC2 (and/or glazing P6B) according to EN 1627 till 1630.

The outside openable windows (for rooms at ground floor) of customer storages, customer offices and electrical rooms shall be class RC2 (and/or glazing P6B) according to EN 1627 till 1630, and as indicated on the security zoning drawings.

Locks in external door shall have a three-points closure to fulfil the RC2 requirement.

Scope:

- Doors as indicated on door and window schedule drawings.

2.4.12. Security provisions in external doors and windows

The Contractor shall include the following security provisions in the Bill of Quantities, for the external doors which shall be provided with electrically operated security locks:

1. Swinging doors: Replacement of normal door locks by electrically operated door locks. Reference brand: Abloy, type EL560 – EL561. (Price for normal door locks shall be reduced from price for electrically operated door locks.) In case normal seize electrically operated locks cannot be installed in the door leaves special small locks shall be applied. Reference brand: Abloy, type EL460 – EL461.
2. Doors, in which electrically operated locks shall be installed, shall be provided with a conduit for an electrical cable. The electrical cable shall be delivered, installed and connected by the Electrical Contractor.
3. Doors, in which electrically operated locks shall be installed, shall be provided with a recessed cable transfer. The electrical cable shall be delivered, installed and connected by the Electrical Contractor. Reference brand: VEMA, type EA280-EA281.
4. Swinging doors- and door frames shall be provided with openings for detection magnets and a conduit for the electrical cable in the door frame. Detection magnets and electrical cables shall be delivered, installed and connected by the Electrical Contractor.

Scope:

- Security provisions as indicated on the door and window schedule drawings.
- Specifications, model, type of security door locks must be approved by the final client.

2.4.13. Aluminium curtain walls

Curtain walls of thermally insulated extruded aluminium profile.

Surface treatment: colourless anodised, corrosion class 3.

Color as indicated in paragraph*: Exterior colours.*

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Including coated aluminium and/or stainless-steel sheets, steel supports and insulation for external threshold finishing, as indicated on the drawings.

Insulation value door constructions shall be according to table in chapter 1.6 *Insulation values and insulation materials*.

System with continuous rubber gaskets.

Covering strips on vertical posts suitable for installation of rails for external sunscreens and external sun shading louvre elements on a framework.

Glazing system, dry system, EPDM frames vulcanised on the inside, suitable for:

- exterior double glazing.
- exterior triple glazing.
- aluminium sandwich panels.
- insulated enamelled glass panels.

Covering strips of vertical posts shall be suitable for fixation of special (sun-protection) wing elements, as indicated on the drawings, or the wing profiles form the covering strips. Width of the wing elements same as width of the curtain wall posts. Depth of the wing elements, as indicated on the drawings.

Doors and windows: integrated in curtain wall as indicated on drawings, accompanying aluminium systems. Strength and rigidity shall be calculated by the Contractor and to be approved by the Engineer.

Accessories shall include, but are not limited to:

- sealing equipment;
- flexible EPDM profiles and/or foils;
- fixtures and fittings;
- system related hinges and locks;
- fastenings (corrosion-proof steel);
- weathering's;
- fixed cover caps;
- (sun protection) wing elements, approx. 50/60 x 300 mm2 (w x d);
- fixed leakage thresholds;
- system related joinery.

Note: According to *DM 3 agosto 2015* and later updates (refer to chapter S.8 Controllo Fumi e Calore) and to Fire Permit Package, the openable windows (both windows and parts of curtain wall façade) must have minimum surface of 1/40 of the room surface. Openable windows according to architectural drawings and windows schedules.

Reference brand: Kawneer AA 100 Q, Schüco FW 50 +

Scope:

- The curtain wall including doors and windows as indicated on the drawings.

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2.4.14. Roller shutter door, External

Product description:

- Roller shutter door with insulated panels filled with CFC-free polyurethane foam, panel thickness 42 - 45 mm, panel height 545 - 600 mm.
- Surface, waffled steel.
- Integrated finger pinch protection.
- Top, bottom and side seals and seals between door sections.
- Standard track system in galvanized steel.
- Spring balancing, 20.000 cycles.
- Spring break device.
- Lock bolt, step-handle.
- Compliance with all operational and safety instructions in EU Directives and the standards of the European Standardization Committee (CEN).
- Standard hardware (head room 485/510 mm to 800 mm).
- Operating system: electrical.
- Door dimension, scissor lifting table (clear W x clear H): 3,000 x 3,700 mm2.
- Wind load (EN 12424): Class 3.
- Thermal transmittance (EN 12428): 1.10 W/(m2.K), steel door, full panel.
- Water penetration (EN 12425): Class 3.
- Air permeability (EN 12426): Class 3.
- Sandwich glazing, double glazed, acrylic, rectangular, approx. 600 x 290 mm2, 3 per door.
- Surface colour: polyester coating exterior: according to Paragraph *External colours.*
- Lock with profile cylinder lockable on both sides.
- Hardware: drop clearance minimal 320 mm.

Electrical operation:

- Operating voltage: 230 V AC, 1 phase
- Mechanical engagement/disengagement, in combination with spring break device.
- Direct drive system. Soft stop, soft start.
- Temperature range: -20°C to 60°C.
- Connection using "CEE plug" or lockable mains isolator.
- Control unit: 950. Output 0.37 kW, input 1 x 230 V, including control unit with standard actuator up-stop-down. Door closing with pneumatic safety device. Operating speed appr. 0.25 m/s, safety rating IP 55. Manual operation shall be possible when power failure.
- Door/leveller interlock.
- Cable break device.

Reference brand: Assa Abloy Enhanced Insulated Roller shutter, Hörmann

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Scope:

- Loading area: 2 external overhead doors.

2.5. Internal frames, windows, doors and inspection hatches

2.5.1. General

Master key plan system to be included in the package of the contractor. Cylinders and emergency terminals should also be part of this plan.

The Contractor shall submit following items to the Employer and/or Engineer, for approval:

- Product data for each product specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.
- Samples of door and window frame types, length 300 mm, including coatings.

Doors in the white spaces, doors and inspection hatches in the air intake and exhaust shafts: Strength of the door frames and doors to withstand over and under pressure of the air handling installations: 100 kg/m2.

Doors in the hot gallery, doors and inspection hatches in the air intake and exhaust shafts: Strength of the door frames and doors to withstand over and under pressure of the air handling installations: 300 kg/m2.

All fixings, joints, flashings, connections between doorframes and wall, shall withstand these over- and under-pressures without (unacceptable) deformations, leakages, cracks, vibrations.

All door frames shall cover the full thickness of the wall.

All internal doors and door frames shall be made of steel or wood.

Review pressure drop in rooms with high ventilation speeds to see if doors can still open or provide provisions to the door / door frame (Data Halls, rooms with smoke extraction).

Doors shall be provided with glazing as indicated on the drawings. Also refer to paragraph *Fire resistant glazing*

2.5.2. Internal frames, windows, doors and inspection hatches general

Minimal clear dimensions of door frames (width x height in mm):

- White spaces: 1800 x 2800 mm2
  900 x 2200 mm2
- Corridors (logistics): single: 900 x 2400 mm2
  double: 1800 x 2650-2800 mm2
- Escape routes: 900 x 2200-2400 mm2
- Technical rooms: single (EEO): 900 x 2200 mm2
  double (material path): 1800 x 2800 mm2
- Offices: 900 x 2200 mm2

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- Conference room: 800 x 2200 mm2
- Sanitary rooms: 900 x 2200 mm2
- Toilets: 900 x 2200 mm2
- Toilet for disabled persons: 1000 x 2200 mm2
- Lift for goods and personnel: refer to paragraph *Lift.*

Notes:

Clear dimensions shall be measured at the inside of the door frames; the opening through which transport of people and goods shall take place. Minor deviations, due to the brand/type of the window and door frames, are allowed: maximal 15 mm per post or mullion.

Doors or hatches of technical shafts shall have a threshold details same as doorpost and upper door-frame details.

All door leaves should be able to open to a minimum of 180 degrees (the exception being doors located crosswise in corridors – due to lack of space).

2.5.3. Internal manual operated sun shading screens (against inside of external frames)

Manual operated (chain/crank control) internal shading screen without side guidance.

Dimensions: according to drawing.

To be installed against the back side of the curtain wall or window. In case this is not possible; exactly fitting between the vertical posts of the aluminium curtain wall system.

Side guidance by means of stainless-steel cables, mounted on top and bottom, and equipped with tension spring.

Metal housing of shading screen made of extruded aluminium, minimal thickness 1,4 mm.

Underbar made of extruded aluminium.

Surface treatment of all aluminium elements of shading screen: powder coated minimum layerthickness60 µm. Colour as indicated in colour chart in previous paragraph

Shading screen fabric: PVC coated glass fibre, weight approx. 400 gr/m2, thickness 0.5 mm, openness factor approx. 4 %, light transmission approx. 6 %, reflection solar radiation approx. 77 %Colour: light grey (woven), standard product-colour.

Sun protection Fc 0.44 / g 0.40

Including corrosion free fixation materials.

Width of the internal screens: 1 or 2 windowpanes of the curtain wall or window.

Length of the internal screens: The full height of the curtain wall or window. (Maximal height 4000 mm)

Reference brand: Verosol: SilverScreen 4%, Hunter Douglas: RB EOS 500 – type 5-11

Scope:

- Offices, meeting and conference rooms, tenant offices, breakrooms, customer amenities.

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2.5.4. Door thresholds general

Internal doors for material transport shall not be provided with upstanding thresholds due to easy material transport. Is also applicable for the fire-resistant single and double swinging doors and stacking doors.

Bottom sides of door openings, in case of raised floors on one- or both sides, shall be finished with flat sheets made of stainless steel or coated steel, minimal thickness 3 mm. Top side of the sheets flush with the top side of the finished / raised floors. Width of the stainless-steel threshold sheets same as the thickness of the walls or as required by the supplier/manufacturer of the internal door frames necessary for the fire resistance / smoke tightness certificate (wall thickness + thickness fire boarding on both sides).

Note: Use an L-shaped steel element where the floor finish changes at the threshold of the glass partitions.

2.5.5. Material transport door frames and doors made of steel sections

Steel door frames and doors shall be electrolytic galvanized, and powder coated or painted.

Surface treatment: powder coated (epoxy-polyester) or painted (primer and paint-layer).

- Powder coated minimum layer thickness 60 µm.
- Painted: minimal layer thickness primer 40 µm, minimal layer thickness finishing layer 60 µm.

Door frames and doors shall be including all provisions for locks, hinges, door closers, fixing in block wall, etc. and including gaskets, draught strips, etc.

Door frames and doors shall be suitable for different kind of panels and glazing.

Panels shall be executed as sandwich panels (sheet – insulation material – sheet). Insulation materials shall be of mineral wool insulation.

Top sheets of panels shall be made of steel, corrosion protected, and powder coated or painted. Panels shall be placed in internal doorframes with rubber gaskets.

Fire resistance shall be provided where indicated on the drawings and according to local regulations.

Door frames shall cover the full thickness of the wall.

Reference brand names: Hörmann, Jansen, Alara Lukagro, Novoferm.

Scope:

- Door frames and doors as indicated on the drawings.

2.5.6. Fire resistant swinging doors and frames

Doors and doorframes are fire rated EI60 according to EN 13501-2, as indicated on drawings.

In case of application of insulation materials, only mineral wool shall be accepted.

Fire rated doors and doorframes shall be provided with certificates.

Fire rated swinging doors shall be provided with door closers.

Double fire-resistant swinging doors shall also be provided with fire resistant closing profiles between the door leaves and with delayed door closers, refer to paragraph*: Door ironmongery, interior.*

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Note: Fire resistant doors EI 60 will be compliant with UNI 9723.

For smoke tightness of doors see paragraph *Smoke partition doors and door frames.*

Reference brand names: Hörmann, Jansen, Alara Lukagro, Novoferm.

Scope:

- Fire resistant doors, door frames and windows as indicated on the drawings.

2.5.7. Fire resistant inspection hatches

Inspection hatches and hatch frames are fire rated EI60 according to EN 13501-2, as indicated on drawings.

Note: In case of installation of fire-resistant hatches in fire resistant gypsum board walls as indicated in paragraph Gypsum board- and cement board walls.

Auxiliary steel structures, -trimmers shall be installed to receive the appropriate licences.

In case of application of insulation materials, only mineral wool shall be accepted.

Fire rated hatches and hatch frames shall be provided with certificates.

Fire rated hatches shall also be provided with fire rated closing profiles.

Reference brand names: Knauf, Gyproc.

Scope:

- Fire resistant inspection hatches as indicated on the drawings

2.5.8. Smoke partition doors and door frames

Fire-resistance class shall be smoke-proof (RS) and minimal EI60 fire rated according to EN 13501-2.

Door frame and door leaf shall be rebated to have a smoke tight connection when closed.

Glass shall be smoke tight and fire resistant, as referred in *paragraph 2.9.*

Door shall be self-closing, refer to paragraph *2.5.9: Door ironmongery, interior.*

Smoke tight swinging doors shall be provided with drop seals. Seals shall be fully concealed within door leaf and shall push down when door is in closed position. Door bottom seals shall be fitted as per manufacturer's specification.

Reference brand names: Jansen, Hörman, Novoferm.

Scope:

- Smoke partition doors as indicated on drawings.

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2.5.9. Door ironmongery, interior

Hinges: All doors shall be hung on minimal three or four stainless steel hinges per door; the hinges concealed in the profiles. Doors for persons minimal two hinges per door.

Locks: All doors shall be fitted with Euro profile mortise lock, stainless steel cover plate, varnished steel lock casing: mortise door locks with cylinders for the outer doors.

Locks shall be provided with night-latch.

Emergency exit doors to provide with emergency locks and shall be free open-able from the inside (without the use of keys), provided with handle or fixed doorknob.

Handles: The door handles, and plates shall be in anodized aluminium or stainless steel (EN 1.4401).

Door closers: Internal doors for persons, self-closing doors as indicated on the drawings and/or door-list, and all self-closing doors according to local and national regulations (especially fire resistant), shall be provided with door closers, sliding or rotatable arm type. Strength shall be defined on basis of weight and function of the applicable door according to manufacturer's specifications and local regulations.

In the case of double leaf doors:

- These need to be secured automatically at the top and bottom in order to be effective.
- a sequencer or door coordinator and automatic door closer must be installed where the passive leaf closes before the active leaf.
- Secure double doors with continuous (constant) flush bolts. The hole in the floor shall be reinforced with a metal sleeve with dust cover.

Cylinders: Euro profile cylinder, stainless steel finish, on all lockable doors.

Temporary cylinders shall be provided and installed by the Contractor.

Final cylinders (Master-keyed on a 3-level system) shall be delivered by the Employer and shall be installed by the Contractor.

Doors of toilets and showers shall be provided with indicator locks with interior knob-turn cylinders.

Door furniture shall be in a quality for non-residential buildings and shall be made of anodized aluminium or stainless steel (EN 1.4401).

Door-closer with holding (open) position for outside door or automatic door opener (electrically operated) as indicated on the security drawings and door schedule.

Note:

Entrance doors of data-halls / white spaces, and connected rooms such as mechanical galleries, shall be provided with concealed door bottom seals. Seals shall be fully concealed within door leaf and shall push down when door is in closed position. Door bottom seals shall be fitted as per manufacturer's specification.

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Doors toilet groups are lockable from outside, but always openable from inside.

Reference brand names: Assa Abloy, Abus.

Scope:

- Locks, handles, knobs and cylinders as indicated on the drawings and in documents.

2.5.10. Security provisions in internal doors and windows

The Contractor shall include the following security provisions, as indicated on drawings and tables, in his offer:

- Swinging doors: Replacement of normal door locks by electrically operated door locks. Reference brand: Abloy, type EL560, EL561, EL562, EL563. (Price for normal door locks shall be reduced from price for electrically operated door locks.) In case normal seize electrically operated locks cannot be installed in the door leaves special small locks shall be applied. Reference brand: Abloy, type EL460, EL461, EL462, EL463.
- Doors, in which electrically operated locks shall be installed, shall be provided with a conduit for an electrical cable. The electrical cable shall be delivered, installed and connected by the Electrical Contractor.
- Doors, in which electrically operated locks shall be installed, shall be provided with a recessed cable transfer. The electrical cable shall be delivered, installed and connected by the Electrical Contractor. Reference brand: VEMA, type EA280-EA281.
- Swinging doors- and door frames shall be provided with openings for detection magnets and a conduit for the electrical cable in the door frame. Detection magnets and electrical cables shall be delivered, installed and connected by the Electrical Contractor (Security).
- Doors with double-sided access control must be fitted with an additional electric lock and strike, reference brand Abloy, type: Mortise latch bolt locks series 807-10 (in doorframe) and Escape door strike 331U80 (in door-leaf), including conduits for the electric cabling

Note: Please coordinate these specifications with what stated in Security SoR.

Scope:

- Security provisions as indicated on the door-schedules (architectural and security)
- Specifications, model, type of security door locks must be approved by the final client.

2.5.11. Aluminium framed laminated glass-doors in aluminium door frames

Internal aluminium framed glass-doors and door frames shall be powder-coated and shall be suitable for installation in frameless glazing partition walls as described in paragraph Frameless glass partition walls.

Surface treatment: powder coated (epoxy-polyester) or painted

- Powder coated minimum layer thickness 60 µm.

Door frames and doors shall be including all provisions for locks, hinges, door closers, fixing in block wall, etc. and including gaskets, draught strips, etc.

Door frames and doors shall be suitable for laminated glazing. Clear glazing.

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Minimal glass thickness: 8 mm, 44.A2 (laminated glass made of two 4 mm plies (total nominal 8 mm) with a specific acoustic interlayer PVB).

Noise insulation: Rw minimal 37 dBA.

Minimal 3 hinges per door.

Reference brand names: Maars Living Walls, Alux Walls, slim framed glass door or equivalent.

Scope:

- Aluminium framed doors, as indicated in the branding guideline, as indicated on the drawings.

2.5.12. Roller shutter door, internal

Product description:

- Overhead sectional door with insulated panels filled with CFC-free polyurethane foam, panel thickness 42 – 45 mm, panel height 545 – 600 mm.
- Surface, waffled steel.
- Integrated finger pinch protection.
- Top, bottom and side seals and seals between door sections.
- Standard track system in galvanized steel.
- Spring balancing, 20.000 cycles.
- Spring break device.
- Lock bolt, step-handle.
- Compliance with all operational and safety instructions in EU Directives and the standards of the European Standardization Committee (CEN).
- Standard hardware (head room 485/510 mm to 800 mm).
- Operating system: electrical.
- Dimensions according to the drawings.
- Wind load (EN 12424): Class 3.
- Air permeability (EN 12426): Class 3.
- Surface colour: polyester coating exterior: according to Paragraph *1.13: Internal colours.*
- Lock with profile cylinder lockable on both sides.
- Hardware: drop clearance minimal 320 mm.

Electrical operation:

- Operating voltage: 230 V AC, 50/60 HZ (internal supply 3-phase 230 V AC).
- Operating factor: ED = 30%, S3 10 min, non-continuous operation.
- Torque: 15-40 Nm, depending on reel type (value of given door shaft).
- Brake: non-reversible worm gear.
- Speed monitor: electronic monitoring.

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- Freewheel / clutch: mechanical engagement/disengagement.
- Limit switch: electronic via torque (setting “Door open” during programming) Setting “Door closed” in processor board.
- Gears: worm gear 1750 RPM yields prox. 24 rotations door shaft.
- Direct drive system. Soft stop, soft start.
- Temperature range: -20°C to 60°C.
- Connection using “CEE plug” or lockable mains isolator.
- Control unit: Output 0.37 kW, input 1 x 230 V, including control unit with standard actuator up-stop-down. Door closing with dead-man controls. Operating speed 0.25 m/s, safety rating IP 55. Manual operation shall be possible when power failure.
- External push-button, key-switch.
- Cable break device.

Reference brand: Hörmann / Novoferm / Assa abloy

Scope:

- Loading area / staging area: 1 internal overhead door.

2.5.13. Wooden doors in steel door frames

Steel door frames shall be electrolytic galvanized, and powder coated or painted.

Surface treatment: powder coated (epoxy-polyester) or painted (primer and paint-layer).

- Powder coated minimum layer thickness 60 µm.
- Painted: minimal layer thickness primer 40 µm, minimal layer thickness finishing layer 60 µm.

Wooden door consisting of hardwood edging battens, complete chipboard infill, plywood/hardwood panels and door surface finished with melamine/HPL coating, edge battens painted colourless. Door thickness: 40 mm. Flush mounted.

Door frames and doors shall be including all provisions for locks, hinges, door closers, fixing in block wall, etc. and including gaskets, draught strips, etc.

Door frames and doors shall be suitable for different kind of panels and glazing.

Fire resistance shall be provided where indicated on the drawings and according to local regulations.

Door frames shall cover the full thickness of the wall.

Reference brand names: Hörmann, Novoferm, Bruynzeel.

Scope:

- Door frames and doors as indicated on the drawings.

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2.6. Cladding

2.6.1. General

The Contractor shall submit the following items to the Employer and/or Engineer, for approval:

- Product data for each product specified, including details of construction with regard to materials, dimensions of individual components, profiles and finishes.
- Samples of each type of exposed finish.

Loads: Withstands loads and thermal and structural movement requirements indicated without failure:

- No Air infiltration
- No water penetration is allowed.
- Wind Loads: include anchorage and fasteners, capable of withstanding wind-load according to local and national regulations.

Flatness and smoothness (related to the steel construction):

- Overall inclination of the cladding maximal h / 500.
- Alinement per gridline in relation to the adjacent gridline, +/- 10 mm.
- Sandwich panels not mounted in a convex or concave way.
- Dimensions of the joints +/- 2.5 mm.

Support steel

- The supplier of the sandwich panels shall apply all the needed support steel for the sandwich façade - and shaft panels.

Insulation value of cladding shall be according to the table in paragraph *Insulation values and insulation materials*, except for the louvres in the elevations.

2.6.2. Sandwich panels exterior walls – type A

Vertical installation; standard vertical joints.

Panel length: maximal approx. 3000 mm, and as indicated on the drawings.

Principal panel length: 3000 mm as indicated on the drawings

Panel width: 1000 mm.

Finishing of the steel sheets:

- Outside: Smooth profile (G) minimal thickness 70 µm.
- Inside: V profile (V) standard minimal thickness 50 µm.

Colours: standard RAL colours according to the colour list as mentioned in paragraph*: Exterior colours.* Panels in different colours, as indicated on the drawings.

Fixation shall be done with EPDM tape between the steel structure and the sandwich panels and EPDM tape between the sandwich panels to comply with the required air tightness according to part*: Airtightness of walls and roofs.*

Air Permeability: n = 1.5, C = 0.00005 in accordance to EN 14509.

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Water Permeability: Class A (1200 Pa) in accordance to EN 14509.

All fixing materials shall be included. All materials shall be corrosion free.

Blind fixation (screws not visible, screws covered with vertical mounting strips). Decorative Alu extrusion HF40 and trasversal gasket to cover the joints.

Vertical mounting strips to be used at columns / vertical joints (position as per elevation drawings); material, finish and colour same as outside steel sheet of sandwich panels. Including foam/rubber strips to prevent the ingress of rainwater. Samples to be provided to Employer and/or Engineer for approval.

Edges and connections shall be sealed with silicon sealant.

Special corner prefabricated sandwich-panel-elements for the external corners, with sharp corner.

Non-combustible according to local standards and regulations. Contractor shall handover applicable certificates (for application in Italy) to Employer and/or Engineer.

As insulation material, only mineral wool shall be applied.

U-value shall be according to table in paragraph *Insulation values and insulation materials.*

Including corrosion-free fixations, thermal insulators, and basic fixation strips.

Some panels shall be dismountable (by repetition) as indicated on the drawings.

Special vertical joint flashings, to make this possible, shall be provided.

Reference brands: Trimo; Trimotherm QBiss One Horizontally laid or equivalent.

Reference brand cantilevered strips: Trimo HF1 – T profile or equivalent.

Scope:

- Facades of Admin block (Facility A Facility Support)
- Stairs and elevator on the office roof.

2.6.3. Sandwich panels exterior walls – type B

Steel sandwich panels with core material of mineral wool insulation.

Thickness: minimal 200 mm.

Vertical installation; standard vertical joints.

Panel length: maximal approx. 6000 mm, and as indicated on the drawings.

Principal panel length: 6000 mm as indicated on the drawings

Panel width: 1000 mm.

Finishing of the steel sheets:

- Outside: Prisma coating system minimal thickness 50 µm, or Purpa coating minimal thickness 50 µm.
- Inside: Polyester coating system minimal thickness 25 µm.

Outside steel sheet: “micro – lined profile” M.Inside steel sheet shall be standard profile “S”

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Exterior steel sheet thickness minimal 0.70 mm.

Interior steel sheet thickness minimal 0.60 mm.

Colours: standard RAL colours according to the colour list as mentioned in paragraph*: Exterior colours.* Panels in different colours, as indicated on the drawings.

Fixation shall be done with EPDM tape between the steel structure and the sandwich panels and EPDM tape between the sandwich panels to comply with the required air tightness according to part*: Airtightness of walls and roofs.*

Air Permeability: n = 1.5, C = 0.00005 in accordance to EN 14509.

Water Permeability: Class A (1200 Pa) in accordance to EN 14509.

All fixing materials shall be included. All materials shall be corrosion free.

Blind fixation (screws not visible, screws covered with vertical mounting strips).

Vertical mounting strips to be used at columns / vertical joints (position as per elevation drawings); material, finish and colour same as outside steel sheet of sandwich panels. Including foam/rubber strips to prevent the ingress of rainwater. Samples to be provided to Employer and/or Engineer for approval.

Vertical joint between panels, behind mounting strips, to be covered with self-adhesive aluminium tape.

Edges and connections shall be sealed with silicon sealant.

Special corner prefabricated sandwich-panel-elements for the external corners, with sharp corner.

Non-combustible according to local standards and regulations. Contractor shall handover applicable certificates (for application in Italy) to Employer and/or Engineer.

As insulation material, only mineral wool shall be applied.

U-value shall be according to table in paragraph *Insulation values and insulation materials.*

Including corrosion-free fixations, thermal insulators, and basic fixation strips.

Some panels shall be dismountable (by repetition) as indicated on the drawings.

Special vertical joint flashings, to make this possible, shall be provided.

Reference brands: Trimo; Trimotherm FTV HL, standard joints or equivalent.

Reference brand cantilevered strips: Trimo HF1 – T profile or equivalent.

Scope:

- Southern facade of the building along equipment yard.
- Doghouses on the Roof.

2.6.4. Steel flashings exterior

Steel flashings shall be designed and installed on all sides of wall openings, outside and inside corners, bottom side of elevations (plinths), panel joints and roof edges (topside of parapet).

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Metal flashings shall be made of same material, minimum steel thickness of 0.75 mm, same corrosion protection, same finishing coating and same colour as the sandwich panels.

Colours as indicated in the colour list as mentioned in dedicated paragraph.

Flashing shall be designed and installed in such a way that rainwater cannot enter the elevation structure and in such a way that condensate and water leakage can leave the elevation structure.

Horizontal flashings to the outside; slope preferable 5 degrees.

Fixing materials shall be corrosion free.

Scope:

- All flashings as indicated on the drawings and necessary for the complete handover of the project.

2.6.5. Openings in sandwich panels exterior walls

Openings in external walls made of sandwich panels thickness minimal 200 mm.

Openings including all supporting structures such as secondary steel structures.

Openings and other provisions for technical installations shall be defined by the Contractor and shall be included in the price (Bill of Quantities). Closing of the openings (airtight, and fire resistant if applicable), after installation of the technical installation parts, shall also be included.

For number and dimensions of openings for louvres, windows, etc, please refer to technical drawings.

Scope:

- Openings as indicated on the architectural, mechanical and electrical drawings.

2.6.6. Façade screen on roof platform

An acoustic screen with a filling of acoustic lamellas and mesh will be installed around the platform with cooling units.

Excellent corrosion protection according to EN ISO 12944, class C3.

Material: expanded steel mesh, including load-bearing steel frames, hot-dip galvanized, acoustic lamellas, all painted in a given colour according to the table in *Exterior colours*.

Air opening: total screen including structure minimum 60%.

Layout, size according to the drawings.

Acoustic lamellas should have an acoustic test for sound reduction, the acoustic range complies with the requirements of administrative procedures.

Only applicable for the screens around the external emergency staircases: Doors shall be integrated in the screen elevations (flush). Doors shall only be openable from the inside / in the escape route direction. Closed steel sheets (thickness 2 mm) shall be provided around door locks / handles, so handles cannot be operated from the outside, diameter 600 mm. Doors including locks, handles, hinges.

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Technical specifications for expanded steel sheets.

- Mesh width: 200 mm.
- Mesh height: 80 mm.
- Thickness: 24 mm.
- Front (light) aperture: 52 %.
- Air aperture: 79 %, total screen including structure minimal 60 %.

Fastening system: MD Resto STR 116.

Scope:

- Perimeter wall of the Roof platform (chiller deck) from bottom side steel structure roof platform till top side of steel structure placed on roof platform, as indicated on the drawings.
- And other locations as indicated on the drawings, screens around the external emergency staircases.

Reference brand: Metadecor, MD Coliseum or equivalent.

2.6.7. Aluminium or steel bended sheet frames

Aluminium or steel bended sheet frames (picture frames) fixed on an aluminium or steel framework around curtain walls windows.

Minimal aluminium sheet thickness: 2.5 mm. Minimal steel sheet thickness: 1.5 mm.

Dimensions (mm): according to the drawings.

The whole shall be highly watertight and provided with drainage openings and drip edges.

Edges sharp shaped and seams between the sheets fitted with rear profiles.

The joints between the bended sheets shall be kept to a minimum and shall be provided on logical locations, and on same locations at all frameworks.

Aluminium or steel framework shall be worked out by the Contractor and/or as indicated on the drawings; all wind- and snow-loads shall be considered.

Fixation of the framework against the substructure with insertion of thermal insulators.

Wherever possible, the aluminium or steel sheets with converted edges to be mounted under the curtain wall cover strips.

On the inside to be fitted with anti-thrum material.

Excellent corrosion protection performance according to EN ISO 12944, Class C3.

Material aluminium alloy AlMgSi 0.5 6063 F22.

Water drainage: concealed system.

Surface treatment: powder coated minimum layer thickness 90 µm.

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Scope:

- Bended sheet frames of staircases, as indicated on the drawings.
- Bended sheet frames on facades, as indicated on the drawings.

2.6.8. Fire resistant boarding

Fastening of fire-resistant boarding on special framework with stainless or corrosion protected screws or staples.

Edges: right angles, chamfered edges.

Thickness (mm): shall be defined by the Contractor, based on the brand and the required fire resistance, and the dimensions (area, volume) of the steel beams and steel columns. Fire resistance shall be proved with certificates by the Contractor.

Fire-resistance: as defined by the Engineer and/or local building regulations, and according to the Fire protection certificate; 30, 60 or 90 minutes.

Fire resistance of fire-resistant boarding on steel subframes shall be minimal the same as the fire resistance of the wall.

Reference brand: Promat (Promatect H), Rockwool, Knauf, or equivalent.

Scope:

- Steel subframes for doorframes and large wall openings in fire resistant gypsum board walls.
- Steel beams in the portal of the main entrance of the building - minimum R30.
- Support steel for precast concrete platforms and stairs.

Alternative: Fire resistant boarding in the form of special fire-resistant gypsum board, to be installed by the same company as the gypsum board walls. Including certificates for minimal required fire resistance.

2.6.9. Openable sandwich elevation panels

Sandwich panels of openable panels shall be same as elevation sandwich panels. Same materials, thickness and finishing materials. Including paint-coated steel supporting frames.

All connections, joints, etc. shall be air- and watertight. Including all necessary flashings in same material, finishing and colour as sandwich panels.

Openable sandwich elevation panels shall be able to be dismounted and mounted repeatedly (5 times) without damage or loss of function.

Reference brand: Trimo, Hoesch, Kingspan or equivalent.

Scope:

- The openable sandwich panels, as indicated on the drawings.

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2.7. Stairs and balusters

2.7.1. Steel stairs hot dipped galvanized, external

The steel stairs consisting of main steel beams, support beams for the landing platforms, steel columns, treads of steel grating and tubular sections for balusters, kicking plates and railings.

Emergency stairs: Steel quality: S355, Execution class ExC3 according to UNI EN 1090-2

Ramps and baluster: Steel quality: S235, Execution class ExC2 according to UNI EN 1090-2

Type of stairs: straight-run stairs, with landings as indicated on the drawings.

Stairs height: according to architectural drawings.

Riser (mm): according to architectural drawings.

Going (mm): according to architectural drawings.

Overlap (mm): minimum 40 mm.

Steps and platforms consisting of hot dipped galvanized gratings, minimal thickness 30 / 40 mm. The grating elements fixed with steel angles to the stair beams and landing platform structure.

Railings and/or handrails or kicking plates shall be provided on both sides of the stairs and on 2 or 3 sides of platforms as indicated on the drawings.

For railings, balusters and handrails see the architectural Statement of Requirement. Dimensions according to drawings, national and local regulations.

Note: Steel stairs on roof shall be fixed to steel platforms. Free space between bottom stairs and roof covering approximately 50 mm. No connections with roof structure / membrane is allowed.

Hot dipped galvanised steel elements shall be cleaned from sharp edges and zinc whiskers/flakes before installation.

Excellent corrosion protection performance according to EN ISO 12944, Class C4.

Scope:

- External steel emergency stairs, ramps and baluster.

2.7.2. Steel balusters, railings, handrails, external, h.d.g.

Balusters and railings made of tubular steel section with diameter 48.3, 42.4 and 30 mm, thickness tube steel 3 - 4 mm.

Vertical supporting posts diameter 42 mm, c/c maximum 1200 mm.

Horizontal elements: 3 tubes, 1 kicking plate

Top horizontal tube diameter 48 mm.

Intermediary horizontal tubes diameter 30 mm.

Kicking plates for internal and external balusters/railings, dimensions 4 x 100 mm2.

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Height: min. 1100 mm

Steel quality: S235.

All fixing elements shall be non-corrosive.

Dimensions according to drawings and national / local regulations.

Material: Hot dipped galvanized steel. Thickness zinc-layer minimal 70 µm.

Excellent corrosion protection performance according to EN ISO 12944, Class C3.

Scope: Balusters / railings / handrails:

- at all floor level differences, as per local and national regulations,
- on the roofs where the parapet is lower than 1100 mm and where no safety cable can be installed,
- on the sides of the stairs and steel roof platform,
- on the sides of the external steel stairs, platforms and walkways.

2.7.3. Steel balusters, railings, handrails, internal staircase, powder coated

Steel balustrade, railings and handrail made of slatted elements and stainless-steel handrails.

Type: slatted gate; bottom side of the railing-elements flush with the underside of the concrete staircase/platform/floor. Material: steel, steel quality: S235. Powder coated light grey.

Parts: top and bottom rails: strip profile, dimensions 50 x 12 mm^2.

Vertical bars: strip profile, dimensions 50 x 12 mm^2, c/c maximum 100 mm; without welding beads, between the top and bottom rails.

Handrails: stainless steel tube, diameter 48 mm, brushed.

Mounting plates: strip steel, with welded lips or through steel plate. As indicated on the drawings.

Finishing: fixing plates/steel plate deburring all around and provided with a radius of curvature of 1.25 mm.

Finishing: powder coated, minimal thickness of coating (including anti corrosive primer): 90 µm

Accessories: Fasteners: stainless steel, type A2; visible fasteners by means of cap nuts.

Handrail wall-side: stainless steel tube, diameter 48.3 mm brushed, on stainless steel fixation elements.

Excellent corrosion protection performance according to EN ISO 12944, Class C1.

Scope:

- Balusters, railings and handrails of internal staircases.

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2.7.4. Cage ladders

Cage ladders shall be designed and constructed according to all applicable local and national standards.

Cage shall be provided in cage ladder when higher than 2.5 meter from adjacent ground-, floor- or roof surface.

Cage diameter: 700/800 mm.

Width of ladder: 500/600 mm.

Step-distance: 250 mm.

Wall distance: 250 mm.

Material: Hot dipped galvanized steel, according to Structural SoR.

Steel quality: S235.

Ladders shall be fixed to the main steel structure or supporting steel structure, according to drawings.

Steps shall be provided with anti-slip surface.

At roof level, balustrades with a length of 2 meter shall be installed at both sides of the ladders extending horizontally on the roof.

Cage ladder shall be fixed to the wall, shall not be supported by the roof (no connections with the roof membrane).

Hot dipped galvanised steel elements shall be cleaned from sharp edges and zinc whiskers/flakes before installation.

Excellent corrosion protection performance according to EN ISO 12944, Class C3.

Note: Please coordinate these specifications with what stated in the Structural SoR.

Scope:

- Cage ladders as indicated on the drawings.

2.7.5. Safety cables

Horizontal fall protection cable system.

Requirements anchor devices (EN 795): Class C.

Material: cable diameter 8 mm, with tensioning device from stainless steel EN 1.4401.

Tensile strength class steel cable: 38 kN.

Roof anchors suitable for simultaneous use by 3 persons; shall be calculated / defined by the supplier / manufacturer.

Roof anchors: stainless steel EN 1.4301, constant force posts.

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Anchors mechanically fixed to the concrete/steel roof structure with corrosion protected anchors.

Drawings and calculations shall be prepared by the Contractor and shall be handed over to the Employer / Engineer for approval.

Calculations shall be based on Eurocode 0 (Basis) and Eurocode 1 (Definition of loads).

Fall protection system shall be accessible from safe area on roof.

To comply with all local and national regulations.

Applicable European standards: EN 353-1, EN 353-2, EN 341, EN 354, EN 355, EN 358, EN 360, EN 361, EN 362, EN 363, EN 364 and EN 795.

Including:

- 2 safety belts / harness belts
- 2 catch lines / fall-stop apparatus with safety hook
- safety equipment storage facility
- instruction cards and pictogram signs

Reference brand: EnSafe Safeguard, Latchway Mansafe.

Scope:

- On the flat roofs of the building, as indicated on the drawings.
- On the roof of the staircase / lift-shafts.

2.7.6. Steel bumper wall protection

Steel bumper wall protection consisting of hot dipped galvanised steel tubes (diameter 80 mm, wall-thickness 8 mm), with welded supports of steel tubes in same dimensions and welded footplates (diameter 240 mm, plate thickness 10 mm) with holes for bolt-fixation. Vertical supports with foot-plates c/c 800 mm. Curved corners.

Topside on 250 mm above finished floor level.

Shape/length as indicated on the drawings.

Fixation on the concrete floor with expansion or chemical anchors; three anchors per footplate, diameter 12 mm.

Excellent corrosion protection performance according to EN ISO 12944, Class C1.

Scope:

- Loading area.
- Staging area.
- In corridors on all floors to protect the internal downpipes.

2.7.7. Temporary steel balusters and railings

Installing temporary steel galvanized railings and handrails at locations, to prevent people from falling.

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Railings consisting of steel uprights, dimensions steel tubes at least diameter 50 mm, to be fixed with steel clamps without damaging permanent installations.

Scope: Around openings which are not covered. Including openings in the grid floor when future chillers are not installed, yet.

Roof parapet where height is less than 1.100 m.

Note: Steel balusters and railings are not shown on the drawings.

Openings on the chiller platform, where no chillers are installed, need temporary steel railings to secure safety of people from falling in.

2.8. Roofing

2.8.1. General

The Contractor shall check the risk of condensation and water-accumulation inside the roof structure and shall take all required measures to prevent unacceptable condensation and water-accumulation.

(Average) indoor conditions during the seasons in Datahall:

	Temperature:	*Relative humidity:*
Winter		
Cold plenum [1)]	25°C	Approx. 45%
Warm room [2)]	35°C	Air from cold plenum* warmed up
Summer		
Cold plenum [1)]	25°C	Max. 65%
Warm room [2)]	35°C	Air from cold plenum* warmed up

[1] = below raised floor
[2] = *above raised floor*

Notes:

- Condensation and water-accumulation calculations (inside the roof structure and against the bottom side of the roof structure) have been prepared by the Engineer for the roof structures as described in these Technical Specifications.
- In case the applied materials for the roof structure deviates from these Technical Specifications the Contractor shall prepare condensation and water-accumulation

[1] = below raised floor
[2] = above raised floor

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calculations based on the actual material-specifications and the climate conditions as indicated in the table above.

The Contractor shall hand over:

- Product data sheets.
- Instructions for storage and installation on site.
- Instructions for testing of physical performances and water-tightness.
- The minimal slope of flat roofs shall be minimal 20 mm/m[1].

All roofs shall be provided with dewatering provisions (gulley's, downpipes) according to the local and national regulations. Numbers and positions as indicated on the drawings.

Applicable standards and rules:

- UNI 8178-1 - Edilizia – Coperture – Parte 1: Analisi degli elementi e strati funzionali delle coperture discontinue
- UNI 10697:1999 – Sistemi continui di impermeabilizzazione – Criteri di misurazione delle superfici ai fini della loro contabilizzazione
- UNI 11442:2015 – Criteri per il progetto e l'esecuzione dei sistemi di coperture continue – Resistenza al vento

2.8.2. Description standard roof structure

Roof structure concrete flat roofs from bottom layer to top layer:

- Concrete roof slabs elements as mentioned in the structural document (SoR)
- Structural concrete layer, as mentioned in the structural document (SoR).
- Vapour barrier, as mentioned in paragraph Vapour barrier; bituminous layer as temporary waterproofing roof during construction.
- PIR roof insulation panels or expanded polystyrene insulation panels, EN 13163, fixation with adhesive or mechanically fixed, mineral wool to be used where Fire Regulation requires it and as mentioned in paragraph: Roof insulation panels.
- Leakage detection system special for roofs.
- VAE (Vinyl Acrylate Ester) layer membrane or FiberTite single ply, as mentioned in paragraph: Roof covering; TPO membrane.

With on top as indicated on the drawings:

- Special plastic layer for walkway, as mentioned in paragraph *Walkways on the roof, concrete tiles.*

2.8.3. Extended warranty period

A warranty period of 20 (twenty) years shall be included in the price / Bill of Quantities for the roofing systems, including vapor barriers and roof insulation.

The Contractor shall describe the works to be carried out on the roof structure for the purpose of this warranty over that 20-year period and how that work will be continued in the event of a takeover or bankruptcy.

Scope:

- All roofing systems including vapor barriers and roof insulation

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2.8.4. Vapour barrier; bituminous membrane

Bitumen vapour barrier membrane displayed on the concrete deck with primer:

- Bitumen vapour barrier according to UNI EN 13970.
- Fire behaviour according to UNI EN 13501-1, Class E.
- Good thermal stability.
- Suitable as temporary sealing (max. 4 months).

Overlaps: minimal 70 mm.

Application shall be according to the instructions of the supplier/manufacturer, based on the position of the roof, wind-loads, etc.

Surfaces shall be cleaned and prepared as per manufacturer's requirements for installation. Possibly present cement skin layer to be removed.

Surface to be pre-treated with primer.

Vapour barrier shall also be installed against vertical elements on the roof such as concrete roof-edge, concrete walls for roof hoods and smoke exhaust fans, steel columns of platforms.

Reference brand: Soprema, Moy, Derbigum or equivalent.

Scope:

- The flat roofs of the building.

2.8.5. Roof covering;waterproofing membrane

Roofing layer singular VAE (Vinyl Acrylate Ester) layer membrane or FiberTite single ply mechanically fixed.

Non-woven glass veil as a separation layer between waterproof layer and insulation layer:

- Proven performance over decades.
- Adheres to solid, rough, clean, dry or slightly moist surfaces.
- Application by roller.
- Good adhesion to different substrates.

Roofing membrane, 1.5 mm thickness multi-layer, synthetic roof waterproofing sheet based on premium-quality Vinyl Acrylate Ester, containing stabilizers, with inlay of glass non-woven and polyester / glass mix fleece backing according to EN 13956:

- Polymeric sheet for roof waterproofing according to EN 13956, certified by Notified Body (1231-CPD-3914) and provided with the CE-marking.
- Reaction to fire according to EN 13501-1 and to Fire regulations and indications from Fire Engineer.
- External fire performance tested according to ENV 1187 and classified according to EN 13501-5: Broof(t2), also for direct contact to EPS board.
- Official Quality Approvals and Agreement Certificates and approvals.
- Resistant against impact load and hail.
- Resistant to all common environmental influences.

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- Resistant to micro-organism.
- Compatible to old bitumen.
- Hot air welding without use of open flames.
- Up to 20 years warranty.
- white color with high solar reflectance with factor sri> 104

In case of mechanically fixation, the fixing system shall be protected with neoprene or other compatible material sealing. In general, fixation according to the supplier technical specifications.

Reference brand: Vaeplan V-FR 1.5mm Derbigum, or FiberTite 50xt Single Ply or equivalent.

Scope:

- The flat roofs of the building.

2.8.6. Walkways on the roof, concrete tiles or walkway membrane

Walkways shall be installed on flat or slow sloped roofs as indicated on the drawings.

Walkways on the roof can be provided by installing a special TPO membrane along the maintenance paths, according to the supplier technical indications.

Reference brand: Soprema, Derbigum, Moy walkway

		TPO WALKWAY 1,80	Metodo di prova
Spessore	(mm)	1,80	UNI EN 1849-2
Peso	(Kg/m²)	1,68	UNI EN 1849-2
Carico a rottura	(N/5cm)	≥ 1100	UNI EN 12311-2
Allungamento a rottura	(%)	≥ 15	UNI EN 12311-2
Resistenza all'impatto su supporto rigido	(mm)	≥ 800	UNI EN 12691
Piegatura a freddo a – 40°C		nessuna rottura	UNI EN 495-5
Resistenza all'invecchiamento artificiale	(U.V.)	nessuna fessurazione	UNI EN 1297
Resistenza alla pressione idrostatica (6 h a 0,5 Mpa)		impermeabile	UNI EN 1928 met. B
Stabilità dimensionale a caldo	(%)	≤ 0,5	UNI EN 1107-2

Spessore	1,80 mm	
Larghezza	1,00 m	
Numero rotoli per pallet	23	
Lunghezza	20 m	
Colore	NERO	

In alternative, walkways on roofs of membrane:

- Separation, levelling and protection layer made of polypropylene.
- Pre-cast concrete porous (light weight) paving tiles laid on tile carriers placed at all corners of each pre-cast concrete tile. Tiles shall be 600 x 600 mm2. Thickness minimal 40 mm.
- Tile-carriers material shall be durable, shall not cause damage roofing layers and shall be in accordance to manufacturer's specification.
- Tile-carries should be adjustable.

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- Colour: grey.

Walkways shall be installed in such a way that there shall be no blockage of rainwater (no pools/puddles on the roof allowed).

Reference brand: Zoontjens; DNS.

Reference brand separation and protection layer: Sika S-Felt A-300.

Scope:

- The walkways on the flat roofs as indicated on the drawings.

2.8.7. Smoke hatches

Smoke hatches shall be installed for the release of smoke in case of emergency.

Performance of smoke hatch according to EN12101-2: 2003.

Clear opening minimal 1.0 m^2 or depending on the surface of the room above (according to local code, clear opening > or = 1/40 of the room's surface.

Including certificate for application in Italy.

Hatch cover shall open automatically 140 degrees within 60 seconds by electronic control.

Triggering of the smoke exhaust system via a trigger point on the ground floor and the top landing:

- Manual button, colour deep orange RAL 2011.
- Power supply and connection shall be delivered and installed by the Electrical Contractor. Electric wiring between the components belonging to the smoke hatches shall be delivered and installed by Contractor.

Cover and curb shall be minimal 3 mm aluminium.

Cover made of hollow-metal design with concealed insulation with insulation:

- U-value of 0.47 W/m^2K or lower.
- Beaded overlapping flange, corners fully welded.
- Cover shall be internally reinforced to handle minimal live load of 195 kg/m^2 and minimal wind uplift of 97 kg/m^2.
- Curb shall be minimal 300 mm with integral cap flashing:
- Fully welded at corners, shall be secured to roof deck.

Aluminium wind deflectors shall be provided.

Rubber gasket permanently adhered to cover.

Finish: Natural anodised or similar, shall be approved by Engineer.

Hinges and fasteners shall be made of hot dipped galvanised steel or stainless steel.

Reference brand name: Bilco; type EEW 50REM, COLT Apollo, or Bovema, or equivalent.

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Scope:

- In roofs of staircases, elevators, other locations according to the drawings.

2.8.8. Temporary watertight closing of roof openings

Openings in the roof shall be closed with a man-safe wooden covering (wooden beams and plywood) and watertight roofing layer (plastic foil, FPO or a bituminous layer). Large coverings shall be provided with slope.

Live load: 100 kg/m^2.

Including installation and de-installation (and removal of all materials).

Including delivery, installation and removal.

Unit rates shall be included in the offer (Bill of Quantities).

Scope:

- Openings in the roof for technical installations.

2.9. Glazing

2.9.1. General

The Contractor shall submit to the Employer and/or Engineer:

- Product Data: Manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.
- Certificates of the fire resistance.

Indicated glass thicknesses are minimal and for detailing only.

Minimum glass sheet thickness for interior glass shall not be less than 4 mm.

Minimum glass sheet thickness for exterior glass shall not be less than 6 mm.

Safety glass (layered and/or tempered) shall be provided in doors and on locations according to local and national regulations.

All glazing shall comply with local- and national regulations.

Double and triple glazing shall be provided with UV-light resistant sealants.

Exterior glazing shall be installed in rubber gaskets.

Calculations shall define the minimal thickness of the glazing shall be prepared by the Contractor and shall be handed over to the Employer and/or Engineer for approval.

Security glazing P4A and/or P6B according to security documents and drawings'

Applicable standards and rules:

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- UNI EN 572-1: 2016 Definizioni e proprietà generali fisiche e meccaniche
- UNI EN 572-2: 2016 Vetro Float
- UNI EN 16612:2019 "Vetro per edilizia – Determinazione della resistenza delle lastre di vetro ai carichi laterali tramite metodi di calcolo";
- UNI EN 16613:2019 "Vetro per edilizia – Vetro stratificato e vetro stratificato di sicurezza – Determinazione delle proprietà meccaniche dell'intercalare"
- UNI EN 572-9: 2016 Valutazione della conformità / Norma di prodotto
- UNI EN 410:2011 Determinazione delle caratteristiche luminose e solari delle vetrate
- UNI EN 673:2011 Determinazione della trasmittanza termica (valore U) – Metodo di calcolo
- UNI EN 13501-1:2009 Classificazione al fuoco dei prodotti e degli elementi da costruzione
- UNI EN 1279-1:2004 Vetrate isolanti

2.9.2. Fire resistant glazing internal

Glazing shall be placed wall frame with rubber gaskets or foam band and joint sealant.

Special fire resistant or safety glazing shall be provided where indicated on the drawings and according to local and national regulations.

Materials need approval of Employer and/or Engineer.

Include all sealants, back-filling, fixings measures, etc.

Glazing will serve as a security measure to provide a visual connection between areas.

Thickness: according to Contractor's calculations, minimal 6 mm.

Fire rating: EI60 in accordance with EN 13501-2, as indicated on the drawings, and as indicated in the "Fire protection certificate":

EI60 in fire rated walls.

Fire load: two-sided.

Glass: clear from secure side, opaque from unsecure side.

Intermediate layers: sheets of PVB (Plyvinyl Butyral) film, clear, laminated.

All fire rated glazing shall be supplied with certificates.

Notes:

- Fire resistant glazing is indicated on drawings and tables.

Scope:

- Fire rated glazing as indicated on the drawings.

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2.9.3. Double glazing exterior windows / doors

Double glazing consisting of two glass panes gas-tight connected with aluminium framework and sealants and filled with Argon. Double glazing shall be installed on the corner where the window frames / curtain walls of the south and west elevations meet. Shall be installed in aluminium curtain wall system with hard-plastic distance strips and rubber gaskets.

The corner where the two glass pieces meet shall be structurally bonded without any profiles. The space behind the glass shall be sealed airtight, so that there will be no possibility of condensation against the inside of the glass.

The non-glass surfaces of this enclosed space must be finished by means of a aluminium sheet which shall be painted / coated white (RAL 9010) before mounting the structurally bonded glass.

Colour glass:	clear with privacy film for offices area, opaque or spandrel glass for storages and other technical rooms.
Glass panel thickness:	>= 6 mm.
U-value:	<= 1.1 W/(m2K).
G-value:	<= 0.40.
Light transmission:	>= 60 %.

Colour and reflection shall match the surrounding glazing.

Scope:

- Double glazing in external aluminium (and steel) doors, as indicated on the drawings.

Note: External windows and curtain walls shall be provided with triple glazing.

Note: All the external windows need to be equipped with a privacy film. Other specifications will be provided during WS5 according to the Client.

2.9.4. Triple glazing exterior windows

Triple glazing consisting of three glass panes gas-tight connected with aluminium framework and sealants and filled with Argon. Triple glazing shall be installed in aluminium curtain wall system with hard-plastic distance strips and rubber gaskets.

Color glass:	clear with privacy film for offices area, opaque or spandrel glass for storages and other technical rooms.
G-value: approx.:	≤ 0.35 (EN 410)
Light Transmission:	>= approx. 60 % (EN 410)
Light Reflection:	not applicable
U-value:	<= 0.70 W/m^{2}K (EN 673)

Overall thickness of complete glass configuration: ≤ 50 mm.

Minimal glass pane thickness: 6 mm for outer panes / 4 mm for middle pane.

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Insulation value windows and glazing shall be according to table in chapter *Insulation values and insulation materials*.

Glass configuration for the ground floor shall have double sided walk-through safe (anti-injury) glass (minimal 44.2 laminated glass for both inside and outside pane).

Intermediate layers: sheets of PVB (Polyvinyl Butyral) film, clear, laminated.

Glass configuration for the upper floors shall be one sided (inside) walk-through safe (anti-injury) glass (minimal 44.2 laminated glass for inside pane).

Special glazing:

- Part of the glazing shall be provided with "boxes" on the backside made of aluminium sheet, coated in a dark-grey colour, with small perforation for ventilation openings provided with air filters and moisture-absorbing materials. Thickness of the aluminium sheets minimal 1,5 mm. Boxes shall fit between the posts and mullions of the curtain walls and shall cover fasteners from the curtain wall to the structure behind. Triple glazing shall be installed in front of the boxes. Minimal depth of the boxes is 150 mm. Aluminium sheet boxes shall be designed in such a way that the fixings of the curtain wall posts against the concrete beams/floors and the fire-resistant boarding against the undersides of curtain wall mullions at floor levels are not visible.

Reference brand: AGC, Saint-Gobain, NSG Pilkington.

Scope:

- Triple glazing in external aluminium curtain walls and windows, as indicated on the drawings.

Note: External doors with glazing shall be provided with double glazing. See 2.7.3

Note: According to *DM 3 agosto 2015* and later updates (refer to chapter S.8 Controllo Fumi e Calore) and to Fire Permit Package, the openable windows (both windows and parts of curtain wall façade) must have minimum surface of 1/40 of the room surface. Openable windows according to architectural and security drawings and windows schedules.

Note: All the external windows need to be equipped with a privacy film. Other specifications will be provided during WS5 according to the Client.

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2.10. Natural and artificial stone

2.10.1. Threshold exterior

Natural stone / artificial stone threshold.

Shape: flat with rounded corners.

Thickness: min 60 mm. Height topside above finished floor level: approximately 10 mm.

Width: 250 mm

Length: Fitting between the clear of the door frame posts.

Stone type shall be approved by Client and/or Engineer.

Surface treatment: smoothed and oiled.

Colour: grey.

Stone threshold shall be installed in applicable mortar or with glue.

Scope:

- Main entrance door.

2.10.2. Threshold interior

Natural stone / artificial stone threshold.

Shape: flat with rounded corners.

Thickness: minimal 50 mm. Height topside above finished floor level: approximately 10 mm.

Width: minimal 100 mm, or same as depth of door frame.

Length: Fitting between the posts of the door frame of same as total width doorframe, depending on situation.

Stone type shall be approved by Client and/or Engineer.

Surface treatment: smoothed and oiled.

Colour: grey.

Stone threshold shall be installed in applicable mortar or with glue.

Scope:

- Entrance doorframes of sanitary rooms, showers, janitorials.

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2.11. Filling materials for joints

2.11.1. Joint sealants, exterior

Documentation of joint sealant materials shall be handed over to the Employer/Engineer for approval.

Joint sealants which shall be applied on the outside of the building shall be resistant to weathering, ozone and ultraviolet light.

Directly after installation of the joint sealants the materials shall be resistant to water.

Joint sealants shall have a good adhesion to the adjoining materials, may not drop out of the joint, show no cracks or bubbles and shall have the necessary elasticity.

Stain formation or chemical damage to the surrounding materials shall not occur.

Plastic foams for joint fillers shall be fire resistant and non-combustible.

Rubber joint gaskets shall be weather, ozone and ultraviolet radiation resistant.

Scope:

- Exterior joint sealant shall be provided on applicable locations on elevations and roof.
- Along the structural joints in facades.

2.11.2. Joint sealants, interior

Documentation of joint sealant materials shall be handed over to the Employer/Engineer for approval.

Joint sealants which shall be applied on the outside of the building shall be water and fungus resistant and shall be homogeneous, etc.

Directly after installation of the joint sealants the materials shall be resistant to water.

Joint sealants shall have a good adhesion to the adjoining materials, may not drop out of the joint, show no cracks or bubbles and shall have the necessary elasticity.

Stain formation or chemical damage to the surrounding materials shall not occur.

Colour: white or light grey.

Scope: Interior joint sealant shall be provided on applicable locations inside the building, such as:

- Along the structural joints in corridors and other rooms.
- Inside corners of walls finished with ceramic wall tiles.
- Joints between ceramic floor and wall tiles.
- Around sanitary elements such as toilets, hand-washbasins and shower-basins.
- Connection joints blockwork and concrete walls and concrete / steel structure.
- Expansion joints in blockwork and concrete walls.

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2.11.3. DPC foil

DPC foil shall be applied for a water- and airtight connection between different kind of building elements, such as steel elevations and concrete walls.

Documentation of DPC foil shall be handed over to the Employer/Engineer for approval.

Material: polyethylene, colour black.

Minimal thickness: 0.35 mm.

DPC foil shall be covered by other materials due to fact that DPC is not UV-light resistant.

Fixation of DPC strips with glue, or corrosion protected nails or staples and/or strips.

Scope:

- DPC foils shall be provided on applicable locations in elevations and roof.

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2.12. Insulation

Applicable standards and rules:

- UNI EN 14934:2008 - Isolamento termico e prodotti leggeri di riempimento per applicazioni di ingegneria civile - Prodotti di polistirene estruso (XPS) ottenuti in fabbrica – Specificazione
- UNI EN 13164:2015 - Isolanti termici per edilizia - Prodotti di polistirene espanso estruso (XPS)ottenuti in fabbrica – Specificazione
- UNI EN 14307:2016 - Isolanti termici per gli impianti degli edifici e per le installazioni industriali - Prodotti di polistirene espanso estruso (XPS) ottenuti in fabbrica – Specificazione
- UNI/PdR 65:2019 - Linee guida per l'applicazione dei prodotti in lana minerale per edilizia
- UNI EN 14303:2016 - Isolanti termici per gli impianti degli edifici e per le installazioni industriali - Prodotti di lana minerale (MW) ottenuti in fabbrica – Specificazione
- UNI EN 13500:2005 - Isolanti termici per edilizia - Sistemi compositi di isolamento termico per l'esterno (ETICS) a base di lana minerale – Specifica
- UNI 10351:2015 - Materiali e prodotti per edilizia - Proprietà termoigrometriche - Procedura per la scelta dei valori di progetto
- UNI EN 13165:2016 - Isolanti termici per edilizia - Prodotti di poliuretano espanso rigido (PU)ottenuti in fabbrica – Specificazione
- UNI EN 14308:2016 - Materie plastiche cellulari rigide - Pannelli compositi con anima di poliuretano espanso rigido e paramenti rigidi per coperture, pareti perimetrali verticali esterne e di partizione interna - Tipi, requisiti e prove.
- UNI EN 14315-2:2013 - Isolanti termici per edilizia - Prodotti di poliuretano espanso rigido (PUR)e di poliisocianurato espanso rigido (PIR) spruzzati e formati in sito - Parte 2: Specifiche per i prodotti messi in opera
- UNI EN 14315-1:2013 - Isolanti termici per edilizia - Prodotti di poliuretano espanso rigido (PUR)e di poliisocianurato espanso rigido (PIR) spruzzati e formati in sito - Parte 1: Specifiche per il sistema espanso rigido a spruzzo prima dell'installazione

2.12.1. Roof insulation panels

Roof insulation panels, material PIR polyisocyanurate or expanded polystyrene, completely fixed with polyurethane adhesive or mechanically fixed. Panels shall be installed on top of the vapour barrier.

Minimum insulation value shall be according to chapter *Insulation values and insulation materials*.

Building physical calculations shall be prepared by the Contractor and shall be handed over to the Employer and/or Engineer for approval, to proof:

- Average insulation value.
- No condensation and water accumulation inside the roof structure.

Fast curing polyurethane gun grade foam adhesive:

- Fast moisture curing for quick bonding.
- Good adhesive tensile strength.
- Adheres to solid, clean, dry or slightly moist surfaces.

Thermal insulation panels in expanded polystyrene:

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- High compressive strength.
- Light weight and low load on the roofing structure.
- Low thermal conductivity.
- Coated glass tissue bonded to the insulation core at both sides.
- Minimal thickness: 165 mm - to meet technical requirements and appropriate U-value – above most all the roof surface; minimal 40 mm along the parapets in lowest parts of the roof slope, as indicated on the drawings and 3D model.

Reference brand: Sika RoofBond, Soprema Sirapor 034 EPS 160mm, Hardrock Multi-Fix (DD), DERBITHERM S AK or equivalent.

Caratteristiche tecniche	Valori	Unità	Norma
Tolleranza dimensionali max		-	-
Lunghezza	L2 (± 2)	mm	EN 822
Larghezza	W2 (± 2)	mm	EN 822
Spessore	T1 (± 1)	mm	EN 823
Planarità	P3 (≤ 3)	mm	EN 825
Ortogonalità	S2 (≤ 2)	mm/m	EN 824
Conduttività termica dichiarata λ_D	0,034	W/mK	EN 12667
Resistenza alla compressione al 10% deformazione max	CS(10)150 ≥ 150	kPa	EN 826
Resistenza alla flessione	BS200 ≥ 200	kPa	EN 12089
Assorbimento d'acqua per immersione parziale	WL(P)0,5 ≤ 0,5	Kg/m^2	EN 12087
Stabilità dimensionale	DS(N)2 ≤ 0,2	%	EN 1603
Stabilità dimensionale a 70°C per 48 ore	DS(70,-)1 ≤1	%	EN 1604
Resistenza alla diffusione μ del vapore acqueo	30÷70	-	EN 12086
Reazione al fuoco	E	Euroclasse	EN 13501-1
Calore specifico (a 20°C)	1450	J /kgK	EN 10456

Dimensioni	Valori	Unità	Norma
Lunghezza (valore netto)	1200	mm	EN 822
Larghezza (valore netto)	1200	mm	EN 822
Spessore	40 ÷ 300	mm	EN 823
Pendenze	0-1-1.5-2	%	-

Spessore isolante [mm]	40	50	60	80	90	100	110	120	130	140	150	160	180	200	220	240	260	280	300
Resistenza termica - R_D [$(m^2 \cdot K)/W$]	1.15	1.45	1.75	2.35	2.60	2.90	3.20	3.50	3.80	4.10	4.40	4.70	5.25	5.85	6.45	7.05	7.60	8.20	8.80

Scope:

- The flat roofs of the building.

2.12.2. Cement board insulation plinth

Cement board plinth element shall be placed against the concrete upstand on the outside of the building to prevent condensation.

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- U-value required is minimal 0.4 W/m2K.
- Thickness 140 mm insulation + 15 mm cement board general.
- Thickness 40mm + 15 mm cement board around columns of Back of House only.
- Foundation of Back of House to have vertical perimeter insulation until a depth of 2 m.
- Temperature resistance -50°C / +75°C.
- Water-resistant high-density polystyrene insulation (XPS).
- Mechanical fixation with stainless steel fixations screws or bolts, in a regular pattern.
- Tolerance maximal 1.0 mm.
- RAL 7035, cement grey.
- Rebated edges on short side.
- Mechanical fixation

Note: If these elements are not available on the Italian market, they may be assembled from the individual parts: insulation panels and cement board sheets, mechanical fixation.

Reference brand: Styrock HR, Knauf Aquapanel Exterior.

Scope:

- Plinth elements around the building against concrete upstand, partly covered by soil.

2.12.3. Roof insulation mineral wool

FM-Global approved stone wool insulation board with mineral fleece lamination on top for the cold bonding of the waterproofing membrane.

Minimum insulation value shall be according to chapter *Insulation values and insulation materials*.

Thickness of the mineral wool roof insulation at the locations of the gutters: same as thickness of PIR insulation panels, if applicable, for an undisturbed drainage of rainwater.

Technical data (reference brand: Rockwool Bondrock MV):

	Symbol	Description/Data	Standard
Application type	DAA	Application segment roof with membrane	DIN 4108-10
Surface Treatment		Mineral fleece	
Fire behaviour		Reaction to fire Euroclass A2-s1,d0 – non combustible	EN 13501-1
		No continuous glowing combustion	EN 16733
		Melting point rock fibres ≥ 1000°C	DIN 4102-17
		Suitable temporary up to 250°C	
Declared value for thermal conductivity	λ_D	λ_D = 0,039 W/(m*K)	EN 13162
Approved value for thermal conductivity	λ	λ = 0,040 W/(m*K)	DIN 4108-4
Vapour diffusion resistance factor	MU 1	μ = 1	EN 12 086
Compressive strength at 10% deformation	CS(10)	σ_{10} ≥ 70 kPa	EN 826
Delamination strength	TR	σ_{mt} ≥ 15 kPa	EN 1607
Pointload resistance at 5 mm deformation	PL(5)	F_P ≥ 800 N	EN 12430
MW-EN 13162-T4-DS(70,90)-CS(10)70-TR15-PL(5)800-WS-MU1			

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Building physical calculations shall be prepared by the Contractor and shall be handed over to the Employer and/or Engineer for approval, to proof:

- Average insulation value.
- No condensation and water accumulation inside the roof structure.

Flat and/or sloped panels insulation panels.

Fixation: Fully bonded with fast curing polyurethane gun grade foam adhesive. Depending on the location on the roof, wind loads, local and national regulations, and assembly instructions of the manufacturer / supplier.

Reference brand name: Rockwool; type Bondrock MV.

Scope:

- On the corrugated roof sheets of the pump room.

2.12.4. Thermal bridge interruption

Thermal decoupling for concrete and steel structures.

High-quality thermal break to thermally interrupt connections from steel to steel and/or steel to concrete structures while both parts are mechanically connected to each other. The thermal decoupling plates shall have a high insulating effect and low heat conductivity.

Material: glass	fibre reinforced plastic.
Maximum load:	approx. 300 N/mm2
Maximum design load:	250 N/mm2
Thickness:	25 mm.
Density:	approx. 1400 - 1500 k/m3
Thermal conductivity coefficient:	approx. 0.19 W/m*K
Bolts and nuts:	stainless steel.

Reference brand: Plaka, Calenberg.

Scope:

- Connections of external steel structures of emergency staircases and cage ladders to the prefabricated concrete structure and/or steel structure.
- Connections of external steel (or aluminium) structures for cantilevered frames around curtainwalls, to the prefabricated concrete structure and/or steel structure.
- And other façade penetrations as indicated on the drawings and typical details

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2.12.5. Insulation under the floor slab and foundations

For the insulation of the foundations, single-layer extruded polystyrene foam sheets with smooth surface skin and batten will be used perimeter on all four sides, free from CFCs, HCFCs, HFCs and subjected to ITT tests of the Munich FIW.

The main features are:

sheets will be equipped with all product certifications according to current legislation and will be produced with a retardant PolyFR flame.

The with compressive strength at 10% crushing according to EN 826 equal to 700 kPa; compressive strength for permanent loads after 50 years with compression ≤ 2%

according to UNI EN 1606 equal to 250 kPa; water absorption according to UNI EN 12087 equal to 0.2% in volume;

absorption of humidity by diffusion and condensation according to UNI EN 12088 <3% in volume;

water absorption following the freeze-thaw test according to UNI EN 12091 ≤ 1% in volume;

resistance factor to the passage of water vapor μ (dimensionless) according to UNI EN 12086;

The thickness of the plates will be:

120 mm

average of closed cells according to UNI EN ISO 4590 equal to or greater than 98%;

reaction to fire European Class E according to UNI EN 13501-1, declared thermal conductivity at 10 ° C

according to UNI EN 12667: 0.036 W / mK

for thickness 120 mm; with DIBt approvals (Z-23.34-1325 *) for applications under load and under slabs of foundation.

Reference brand name: Styrodur

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2.13. Plasterworks

2.13.1. General

The high dimensional accuracy of aerated concrete walls, as well as their simple design, make them suitable for thin-bed mortar. Smoothing plasters, single layer thin interior plasters (3 to 5 mm thick) according to UNI EN 13914-2 .

All plaster works shall be in accordance to local and national regulations.

Application of plaster and preparation and cleaning of plastering surface shall be in accordance to the manufacturer's requirements.

Applicable standards and rules:

- UNI EN 13914-2:2016 - Progettazione, preparazione e applicazione di intonaci esterni e interni - Parte 2: Intonaci interni
- UNI EN 13914-1:2016 - Progettazione, preparazione e applicazione di intonaci esterni e interni - Parte 1: Intonaci esterni
- UNI EN 15824:2017 - Specifiche per intonaci esterni e interni a base di leganti organici
- UNI EN 13658-1:2005 - Profili metallici - Definizioni, requisiti e metodi di prova - Parte 1: Intonaci interni
- UNI EN 13658-2:2005 - Profili metallici - Definizioni, requisiti e metodi di prova - Parte 2: Intonaci esterni
- UNI CEN/TR 15124:2006 - Progettazione, preparazione e applicazione di sistemi interni di intonaci a base di gesso
- UNI CEN/TR 15125:2006 - Progettazione, preparazione e applicazione di sistemi interni di intonaci a base di cemento e/o di calce
- UNI 9727:1990 - Prodotti per la pulizia (chimica) di rivestimenti (lapidei e intonaci). Criteri per l'informazione tecnica.
- UNI 8752:1985 - Edilizia. Verniciature, pitturazioni, RPAC, tinteggiature, impregnazioni superficiali. Classificazione, terminologia e strati funzionali.

2.13.2. Skim coat plasterwork

Single layer finishing plasters, thickness approximately 3 - 5 mm, according to the specifications of the manufacturer of the interior plasters. Also, the choice of finishing plaster (lime or gypsum plaster) is explicitly based on the choice of the substrate (aerated concrete) and the location. All this on the advice of the suppliers of the aerated concrete walls and the skim coat plasterwork.

The right choice depends on several factors:

- materials used, existing flatness of the masonry surface,
- and the desired surface quality, which shall be suitable for wall-paint.

In case skim coat plasterwork will not be possible, due to unevenness of the walls, a thicker type of plasterwork shall be applied.

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Plaster shall be applied with machine and/or by hand trowel.

Plaster shall be free from inherent shrinkage and cracking.

Setting time and drying time shall be according to manufacturer's specifications.

Level of finishing shall be smooth.

Base: Cellular concrete blockwork walls.

Reference brand: Ytong Porenbeton, Lemga, Gyproc, Knauf or equivalent.

Scope:

- where indicated on the drawings.

2.14. Tiling

2.14.1. Ceramic wall tiles

Ceramic wall tiling on concrete, blockwork and gypsum board walls.

Filling material: white smooth

Dimensions: 600 x 300 mm2, in a horizontal direction.

Ceramic tiles shall be approved by Employer and/or Engineer.

First class quality according to Pei class 3.

Ceramic wall tiles shall be installed from floor to the top side of the wall or just above the suspended ceiling.

Ceramic tiles shall be installed in cement mortar or with special tile-cement, according to recommendations of supplier/manufacturer.

Joints shall be filled with special joint mortar. Joints between connections on different materials shall be provided with hygienic elastic sealants (anti-fungus).

Joints of inside corners and junctions with door frames and floor tiles shall be provided with hygienic elastic sealants (anti-fungus).

Including all (coated) aluminium or galvanized metal elements for corners and connections with other building elements.

Reference brand: Cool porcelain white, 600x 300 mm, glossy and matt finishing.

Scope:

- And as indicated on the finishing materials schedule.

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2.14.2. Ceramic floor tiles

Ceramic floor tiles in a quality for non-residential buildings.

Base: concrete floor.

Pre-treatment: clean and grout.

Bed thickness (mm): minimal 30.

Alternative: Thin set may be used to adhere tiles to concrete or screed floors.

Pattern: block pattern.

Dimensions: approximately 300 x 600 mm2 (FT-01) and 600 x 1200 mm2 (FT-02).

Joint width (mm): 3.

Expansion joint: with sealed joint.

Including plinth tiles.

: see room schedule finishing materials.

Ceramic tiles shall be approved by Employer and/or Engineer.

Quality according to Pei class 4 or 5 for glazed floor tiles or comparable quality for unglazed floor tiles.

Ceramic tiles shall be installed in cement mortar or with special tile-cement, according to recommendations of supplier/manufacturer.

Joints shall be filled with special joint mortar. Joints between connections on different materials shall be provided with hygienic elastic sealants.

Slip resistance ceramic floor tiles.

At transition to other floors, place a threshold of composite stone.

At transition to raised floor placement of stainless-steel L profile, installed in the finished floor.

Reference brand: 300x600 mm2, 600x1200mm.

600x1200mm

Scope:

- And as indicated on the finishing materials schedule.

2.15. Screeds and floor systems

2.15.1. General

Transport equipment material:

- Floor finishing materials in rooms, areas and corridors in which heavy material transport and storage will take place shall be resistant against the loads of to be transported and stored materials and use of transportation equipment such as fork-lift-trucks, small hand-pallet-trucks and trucks. (Wheels of fork-lift-trucks and hand-pallet-trucks trucks shall be made of rubber or hard-plastic.)

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- Floor finishing materials shall be easily cleanable and slip resistant.

Applicable standards and rules:

- UNI CEN/TS 14472-1:2003 - Rivestimenti resilienti, tessili e laminati per pavimentazioni - Progettazione, preparazione e installazione – Generalità
- UNI CEN/TS 14472-3:2003 - Rivestimenti resilienti, tessili e laminati per pavimentazioni - Progettazione, preparazione e installazione - Rivestimenti laminati per pavimentazioni
- UNI EN 14041:2018 - Rivestimenti resilienti, tessili, laminati e modulari multistrato per pavimentazioni - Caratteristiche essenziali
- UNI 11515-1:2020 - Rivestimenti resilienti e laminati per pavimentazioni - Parte 1: Istruzioni per la progettazione, la posa e la manutenzione
- UNI EN 13329:2021 - Rivestimenti laminati per pavimentazioni - Elementi con uno strato superficiale a base di resine termoindurenti amminoplastiche - Specifiche, requisiti e metodi di prova
- UNI EN ISO 10580:2012 - Rivestimenti resilienti, tessili e laminati per pavimentazioni - Metodo di prova per le emissioni di composti organici volatili (VOC)
- UNI EN 13893:2005 - Rivestimenti resilienti, laminati e tessili per pavimentazioni - Misura del coefficiente dinamico di attrito su superfici di pavimenti asciutte
- UNI EN 13318:2002 - Massetti e materiali per massetti - Definizioni
- UNI EN 13813:2004 - Massetti e materiali per massetti - Materiali per massetti - Proprietà e requisiti.

2.15.2. Cement-sand screed floors

Thickness of (non-floating) cement-sand screed floors 60 -70 mm, or according to drawings.

Screed floors shall be provided with galvanized wire mesh to prevent cracks due to shrinking.

- Floor flatness according to dedicated paragraph.
- Compressive strength class minimal C40 (minimal 40 N/mm2).
- Including all necessary pre-treatment materials and layers.
- Including hard gravel top-layer additives in case necessary to obtain strength class.

Note: In case cement-sand screed floors shall be floating due to certification attention shall be paid to the strength and reinforcement of the cement-screed floor and any necessary water-tightness of the entire structure.

Scope:

- as indicated on the finishing materials schedule.

2.15.3. H.d.g. steel grid floor, external

Hot dipped galvanized steel grid floor on a steel framework.

- live load: Q_k = 5.0 kN/m^2.
- concentrated load: $F_{q;k}$ = 2.5 kN (on area 50 x 50 mm^2)

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Note: Heavy equipment shall be supported by steel beams, not on grid floor elements.

For steel supporting framework see hot dipped galvanized steel structures.

Type: walkable metal grid panels, smooth surface.

Material: steel S235, hot dipped galvanized.

Excellent corrosion protection performance according to EN ISO 12944, Class C3.

Grid of straps: maximal openings 35 x 35 mm^2.

Thickness of the grid panels: minimal 40 mm.

Including:

- Hot dipped galvanized steel intermediate beams, where necessary.
- Hot dipped galvanized steel angles, where necessary.

Accessories: fastening with bolted clips according to Manufacturer's standard fixing clip system.

Reference brands: Dejo, Thöne.

Scope:

- The grid floors of the roof platform.
- External emergency staircases and walkways.

2.15.4. Openings in h.d.g. steel grid floor elements of roof platforms

Openings shall be made in the h.d.g. steel grid floor elements of the steel platforms on the roof.

Cuts of the h.d.g. steel grid floor elements shall be protected against corrosion with a zinc-compound-paint.

Large openings including h.d.g steel support beams or structures when necessary.

Grid elements including all special fixation clips.

Openings and other provisions for technical installations shall be defined by the Contractor and shall be included in the price (Bill of Quantities). The unit rates below for various sizes of openings and provisions are only for settlement in the event of changes at the request of the Engineer and/or Employer.

Dimensions of the openings (diameter or w x l):	***Number (pieces):***
Diameter 100 mm	10
Diameter 200 mm	10
Diameter 300 mm	10
100 x 100 mm^2	10
200 x 200 mm^2	10
300 x 300 mm^2	10
400 x 400 mm^2	10

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2.15.5. Anti-dust paint

Self-leveling epoxy screed in aqueous dispersion for concrete floorings.

Hardener and dust proofer for concrete surface. Water- based solution that penetrates and reacts with free lime within the concrete surface. It reduces abrasion wear and dust formation and increases resistance chemicals.

- In compliance with the requirements of the 13813 european standard for synthetic resin-
- based screeds
- Easily washable smooth surface.
- Anti-skid satin appearance.
- Perspiring.
- No release of irritant or foul-smelling substances.
- Good resistance to diluted acid and alkaline solutions.
- Application temperature from +10°C to +30°C with relative humidity < 70 %.
- Theoretical thickness: 2,5 mm
- Water vapour transmission: μ < 2800, 3,0 mm
- Reaction to fire: B_{FL}-s1
- Resistance to severe chemical attack: CR11 (Class II), CR10 (Class I)

Scope:

- as indicated on the finishing materials schedule.

2.15.6. Carpet and carpet tiles

Carpet and carpet tiles, suitable for non-residential buildings.

Material and colour samples shall be handed over to Engineer and/or Employer for review and approval.

Dimensions carpet tiles:	610 x 610 mm2.
Track width carpet:	approx. 3660 mm.
Tufted pile weight:	approx. 600 – 1200 g/m2.
Fiber type:	Colorstand SD Nylon
Dye Method:	Solution dyed.
Construction:	Tufted.
Gauge:	approx. 40 – 50 rows per 100 mm.
Installation method:	Loose-lay (or repeatable glued).
Flammability:	Class Bfl-s1, Euro classification EN13501-1, 2002.
Use Classification:	Class 33 Heavy Commercial Use, EN1307.
Slip resistance:	μ > 0.30 (DS), EN 13893.

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Castor chair effect: Intensive use, ISO 4918.

Finished Face Weight: approx. 600 gr/m2.

Total thickness: approx. 5 - 7 mm.

Finished pile thickness: approx. 3 - 5 mm.

Impact Sound: approx. 30 dB, ISO 140-8

Sound absorption: approx. 0.25 (H) Class E, ISO 354.

Reference brand:

- Milliken
  - type: Nordic Stories Isograd, IGD79-133 Dark Dansk,
  - type: Formwork 2.0 Blueprint.
- Mohawk
  - type: Telling Spaces, 975 Sojourn

Scope:

- as indicated on the finishing material list and drawings

2.16. Metal and plastic elements

2.16.1. Steel bar suspension system

Shop drawings, detailed calculations and certification of connections and suspension systems shall be made by the Contractor, based on Engineers' specific reports.

ETA certification and anti-seismic category C2 is required for all the fixing system of MEP installation, floors and false ceilings.

Seismic hazard for design: Strategic buildings class IV - ag/g = 0,074, ground cathegory C-T1, according to Italian Regulation "DECRETO 17/01/2018. Aggiornamento delle «Norme tecniche per le costruzioni"

- Suspended loads (collateral loads):
  - For data hall and pump room: collateral load = 1,50 kN/m2, qk = 2,50 kN/m, continuous load or ceiling load: Fk = 3,6 kN c.t.c 1200mm
  - For electrical rooms, storage and circulation: collateral load = 2,50 kN/m2, qk = 2,50 kN/m, continuous load or ceiling load: Fk = 3,6 kN c.t.c 1200mm
  - For stair and elevator roofs: collateral load = 1,50 kN/m2, qk = 2,50 kN/m, continuous load or ceiling load: Fk = 3,6 kN c.t.c 1200mm (for point loads due to elevator machine see detailed datasheet)
  - For Offices: collateral load = 0,25 kN/m2, qk = 1,00 kN/m continuous load or max ceiling load: Fk = 2 kN c.t.c 1200mm.
  - Safety factor for all loads = 1,5.

Fixation elements:

- One direction: c/c 1200 mm for technical rooms and whitespace.

Aligned with electrical frames in the corridors.

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- U-shape steel profiles.
  U-shape steel profiles, hot deep zinc coat, for easy and standard fixations of suspending elements;
  - Reference product: Hilti MQ-41, wall thickness to be determined by Contractor/ based on anchor spacing.
- Fixation to the bottom side of the precast concrete hollow slab (ceiling) and concrete floor slab with screw anchors or anchor bolts.
  - Reference product: Hilti HUS 3 and Anchor ETA-10/0005 12/112018.
- Fixation to concrete walls with screw anchors or anchor bolts.
  - Reference product: Hilti HST3 or Hilti HY-200-A and rebars or HAS-U 5.8.
- Fixation to masonry with screw anchors or anchor bolts.
  - Reference product: HIT-HY 270+ HIT-IC.

General prescriptions:

- Detailed plan of the suspension system and anchor positions to be provided by Contractor according to precast designer prescriptions, before precast element production.
- To ensure category C2 anti seismic certification, anchors should be placed matching the ribs of the precast concrete hollow slab.
- Through-bolts for heavy duty fixations shall be predisposed in the precast concrete hollow slab by the precast designer
- Drilling/anchors at locations of reinforcement bars in slabs beams and/or columns is not allowed; Before drilling the structural element, the location of the reinforcement bars is to be scanned.
- U-shape steel profiles: hot deep zinc coated elements, carefully cleaned from zinc whiskers.
- Including supporting steel structures as indicated on drawings: hot deep zinc coated elements (carefully cleaned from zinc whiskers).

Scope:

- Fastening installations and secondary elements all over the building.

2.16.2. Interior wall corner protection angles

Wall corner protection shall be aluminium angles, sheet thickness minimal 2.0 mm, height 1.5 meter, 50 mm + 50 mm wide.

Angles shall be fixed with screws and plugs or with self-adhesive (and shock absorbing) tape. All elements and fixings shall be corrosion resistant. Protection angles shall be factory coated.

Corner protections angles (in combination with cement board of the partition wall) shall be able to withstand impacts from regular traffic and equipment movement.

Colour as per paragraph *Interior Colors.*

Reference brand: Corner Guard, Storax STA-50 or equivalent.

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Scope:

- Main corridors adjacent to White Spaces, on outside corners of gypsum board walls and cellular concrete walls, in data center and logistics part of the building.

2.16.3. Fences with doors

Material: hot dipped galvanised steel or factory coated in a standard.

Including hot dipped galvanised screws, bolts, etc.

Fence and doors according to drawings.

Doors shall be provided with locks with day- and night latch and suitable for Eurocylinder.

Height of the fence and doors: height until the slab. Clear width of the doors: 900 / 1000 mm.

Rectangular posts 60 x 40 x 2.0 mm.

Posts mounted on the concrete floor slab and / or walls.

Small mesh width, openings maximal 50 x 200 mm2.

Fence elements:

- Double horizontal wire, diameter 8 mm.
- Single vertical wire, diameter 6 mm.

Sound-deadening attachment for panels to posts.

Flush finish, free from protruding parts.

Reference brand: Heras; Pallas, B&G; Carrade; Kern Studer or equivalent.

Scope:

- as indicated on drawings

2.16.4. Doghouses

Doghouses shall be installed on the concrete upstands of the technical shafts on the roof.

Doghouses shall be made of sandwich-panels and blockwork walls (they will be the support for the installation of fire dumpers where and when needed).

Sandwich-panels in same quality and materials as sandwich panels of elevations, minimal thickness 60 mm.

Including all flashings for corners, roof edges, connections between sandwich panels, watertight and airtight connection on concrete upstands.

Shop drawings shall be prepared by the supplier / manufacturer and shall be handed over to the Employer and/or Engineer for approval.

Openings for pipes, cable trays, ducts shall not be included and shall be made by the Contractors of the technical installations.

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Roof shall have a slope of minimal 50 mm per m1. Roof shall have an overlap at the lowest side of min. 150 mm, at the other sides of min. 50 mm. Including all flashings for water- and airtight connections with the wall panels.

Scope:

- On the roof of the building, as indicated on the drawings, to be installed on the concrete upstands.

2.16.5. Water bunds; steel angles

Water bund edges consisting of factory coated or pre-galvanised steel angles 60 x 60 x 3 mm, watertight mounted on the epoxy paint on the concrete floor slabs.

These bunds shall provide a barrier for possible leakages of the chilled water pipes, to activate the leakage detection (installation by MEP-contractor) and shall prevent further distribution of water.

Fixation to concrete floor slabs with chemical anchors, diameter approx. 8 mm, c/c 600 mm.

Watertight connection with floor slab with foam-tape and elastic joint sealant.

Connections between angles shall be made watertight with self-adhesive bituminous/ aluminium tape.

Hot dipped galvanised steel elements shall be cleaned from sharp edges and zinc whiskers/flakes before installation in the building or shall be powder coated.

Scope:

- As indicated on the drawings (in mechanical galleries, MMRs, CERs).

2.16.6. Skirting

Following materials / types of skirting shall be delivered and installed:

- Skirting (all technical rooms, corridors, storages) - Manufacturer: Johnsonite Product: Traditional Vinyl 4” .080, colour 40 Black.
- Skirting (offices, lobby, amenities and break areas) - Manufacturer: Johnsonite Product: Millwork Equinox 4 1/2" 100 mm, colour 40 Black.
- Skirting (wet areas) - Tiled skirting with stainless steel profile on top. Where there is no wall tiling - skirting the same as the floor tiles.

Scope:

- As indicated on the drawings.

2.16.7. Vertical rectangular aluminium façade profiles

Vertical rectangular aluminium façade profiles:

- Coated in color as indicated on the drawings or in paragraph 1.12: exterior colours.
- Corrosion class 3.
- Dimensions 50 x 200 mm2, wall thickness minimal 3 mm.
- Length (height): as indicated on the drawings, maximal length approx. 13 meters.
- C/c distance: 300 mm

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- Including top en bottom caps (to prevent whistling in the wind) with dewatering opening at the
- bottom side,
- Including corrosion free fixations, invisible seen from the outside.
- Including coated steel framework for fixation of the vertical rectangular aluminium façade profiles.

Maximal distance fixations on framework c/c 3 meter.

- Vertical aluminium façade profiles at the ends of and between the warm air exhaust shafts of the gensets.

2.16.8. Dock shelter

Product description:

- Frame in extruded aluminium sections.
- Front and rear frame spring-loaded and connected with parallel bracing arms.
- Self-adjusting roof frame rises automatically independent of the side frames, in case of very high vehicles.
- Continuous wall and roof cover.
- Easily replaceable curtains.
- Curtain quality top curtains / side curtains:
  - Double-layered high-quality polyester coated on both sides.
  - Total weight approx. 3400 gr/m^2.
- Curtain quality continuous roof cover:
  - Double-layered high-quality polyester coated on both sides.
  - Total weight approx. 3400 gr/m2.
- Top curtain with a slit in the main wear area to minimize contact pressure from the vehicle.
- Top curtain 1200 mm.
- Nominal depth 600 mm.
- Side curtain 600 – 700 mm.
- Colour of curtains black.
- Colour of parking guides white.
- Wall fixings: for concrete and/or sandwich panels. In case of concrete walls behind sandwich panels the dock-shelter shall be fixed to the concrete wall without damaging or compressing the sandwich panels
- Digit on top curtain.
- Roof part with integrated rain channel.
- Reinforced rubber flabs in the side curtains.
- Corner seals to prevent draft in lower area.
- Average truck dimensions: 2,50 x 4,00 m^2 (w x h). Shelter shall be suitable for these trucks. Loading-pit level is 1.20 m minus 0-level.

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Reference brand: Assa Abloy curtain dock shelter, type DS 6060 P.

Reference brand: Hörmann Flap Dock shelter.

Scope:

- Loading Area.

2.16.9. Dock leveller (dock-board)

Product description:

- Integrated frame with wall anchors (T-frames).
- Load capacity: 40 kN (4000 kg) trucks, 20 kN (2000 Kg) vans.
- Maximal point load leveller platform: 6.5 N/mm^2 (minimal 8 mm thick tear plate).
- Lifting height: rise above dock up to minimal 450 mm, fall below dock down to minimal 500 mm.
- Electro-hydraulic operation with two lifting cylinders.
- Hydraulic cylinder swinging out of swing lip in highest platform position.
- Lip exstension in alluminum, in three sections, each with an extender cylinder
- Control unit with selector for “Big Truck” and “City van” operation “Big truck” operation: The lip is extended completely in one piece, total width 2000 m
- City van operation: only the central lip section in extended, width of central section 1000 m
- Automatic, free floating position.
- One-button control unit with mains switch, including interlocking of leveler/door.
- Hold-to-run button to position lip on the truck bed and to put the leveler back in parking position.
- Hydraulic emergency-stop in any operating position.
- Automatic mechanical locking in neutral position.
- Lateral torsion flexibility.
- Side plates (toe guards) with warning signs both above and below dock level.
- Internal wiring plug connection.
- Control Unit Protection Class IP 55.
- The dock leveler meets standard demands of most loading operations and fully complies with rules and regulations of the European Standard EN 1398.
- Dimensions: nominal length 3000 mm, nominal width 2500 mm, lip width 500 mm., lip length 2500 mm
- Surface painted in standard colour. Colour according to paragraph external colours.
- Reinforced steel tear plate swing lip.
- 500 mm swing lip with 5 degrees bend.
- 100 mm bevelled lip.
- Hydraulics: Standard oil for temperature range – 20 °C to + 60 °C.

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- Control unit: Voltage 400 V, 3-phase, cable harness length 18 m, Display of error messages, service interval display, readout function and memory function.
- Frame: standard frame with a height of approx. 200 mm.
- EPDM gap sealing.
- Multifunctional docking control for direct control of dock leveller and door.
- Control unit: Impulse auto button to put the leveller back in parking position, voltage 400 V, emergency stop button.

Reference brand: Assa Abloy, type DL 6030 C Combidock

Scope:

- Loading Area.

2.16.10. Bumpers (dock-board)

Neoprene rubber bumpers on both sides of the dock leveller.

Dimensions 90 x 250 x 500 mm3.

Fixations: hot dipped galvanised steel bolts, nuts, revits.

Reference brand: Assa Abloy dock-shelter bumper, type RB 90.

Scope:

- Loading area.

2.16.11. Wheel chock (dock-board)

Steel wheel chock to prevent vehicles from rolling away unintentionally. Shall also include a sensor to detect vehicle position and be connected to the control units that drive the dock-leveller and overhead door positions. When the chock is not under load, the leveller shall return to a horizontal position and overhead door shall be closed.

Including traffic lights outside and inside the building. Including wall bracket, electrical junction box, detection sensor, feedback diode, and (yellow) electrical cabling.

Reference brand: Assa Abloy wheel chock, type DE6190 WC.

Scope:

- Loading area.

2.16.12. AED Device

- Shall provide minimum (1) semi-automatic AED device per level (including the roof level) for access during an emergency and (1) inside the SOC office.
- AED device shall be battery powered and include ECG analysis and cprINSIGHT analysis technology.
- Exact locations of AED devices to be agreed upon with Client.

Reference Brand: LIFEPAK CR2 Defibrillator or equivalent.

Scope: as indicated on the life safety drawings

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2.16.13. Security sensor for roller shutter

Scanner to detect and alarm, when truck come to close to the roller shutter door

Scope: 2x external roller shutter door

Reference brand: BEA, type LZR- I100/I110

2.16.14. Safety barrier / guardrail

2x Traffic barrier in front of the external roller shutter door to prevent truck crashing the roller shutter.

Material: Galvanized or powder coated steel. Floor mounted connection.

Scope: in front of external overhead door

Reference brand: Boplan or equivalent.

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2.17. Ceiling- and wall systems

Applicable standards and rules:

- UNI 11424:2015 - Gessi - Sistemi costruttivi non portanti di lastre di gesso rivestito (cartongesso) su orditure metalliche - Posa in opera
- UNI EN 14246:2006 - Elementi di gesso per controsoffitti - Definizioni, requisiti e metodi di prova
- UNI 11424:2015 - Gessi - Sistemi costruttivi non portanti di lastre di gesso rivestito (cartongesso) su orditure metalliche - Posa in opera

2.17.1. Ceiling systems general

Fully accessible; each ceiling panel shall be dismountable by repetition to provide access to all technical installations behind/above each panel.

Metal framework; corrosion free suitable for standard office and meeting rooms, sanitary rooms and rooms with high relative humidity's. Framework electrolytic galvanized and factory coated.

For installation of technical elements (lighting fixtures, ventilation Louvres, fire detectors, etc.) against the ceiling panels, install 15 mm plywood in same dimensions as ceiling panels.

The Contractor shall submit samples of all ceiling elements to the Employer and/or Engineer for approval.

Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes.

Establish and maintain environmental conditions for application and finishing gypsum board to comply manufacturer's recommendations.

Individual ceiling panels should be handled and stacked carefully to prevent damage to edges, ends and surfaces.

Maximum deviation in any 2.0 m of ceiling: 5 mm.

2.17.2. Gypsum board ceilings

Metal C-framework, corrosion free suitable for rooms with high humidity. Framework electrolytic galvanized.

Gypsum board panels shall be screwed on the metal C-framework.

Including all fixing materials, flashings, auxiliary structures, etc.

Gypsum board panels in water resistant quality.

Fire resistance 60 minutes (EI60) when indicated on the drawings. Fire resistance of suspended gypsum board ceilings shall be provided with certificates. Suspension structure and connections with surrounding walls shall be made in same fire resistance as fire resistance of ceiling.

Including access hatches for technical installations.

Total thickness of ceiling shall be approximately 75 -125 mm, the ceiling layers shall consist of:

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- Steel framing, thickness 50 - 75 - 100 mm, c/c 300 - 600 mm.
- Over- / under-pressure load: 25 kg/m2.
- Two layers of 12.5 mm gypsum board on the bottom side of the steel C-framing.
- Joints of the first- and second layer of gypsum board shall not be above each other.
- Overlap of gypsum boards minimal 300 mm.

Finish: seams and fastening points: finished smooth and flush with surface. Including special joint sealants, tapes and joint-fillers, finish shall be suitable for wall paint.

Additional wood for structures / facilities shall be included (technical installations).

Exterior corners: corner protection.

Reference brand gypsum board: Knauf, Gyproc.

Scope:

- And as indicated on the finishing materials schedule.

2.17.3. Suspended hygienic ceiling

Suspended ceiling in sanitary rooms, cleanable with water and cleaning agent.

Metal framework visible. Direct hung grid suspension system composed of main beams and cross furring members that interlock to form a modular supporting framework.

Suspended ceiling hangers, zinc-coated steel.

Framework corrosion protected, and factory coated.

Thickness of ceiling tiles:

In case of mineral wool + synthetic covering: minimal 15 mm.

In case of gypsum board tiles with vinyl covering minimal 12 mm.

Dimensions tiles and framework: 600 x 600 mm^2.

Along the walls metal L- profiles (and quality same as framework) and recessed wooden plinths (dimensions approx. 20 x 30 mm^2, painted black).

Fire rating EN 13501-1 A2 / A1.

Including openings and strips for lighting fixtures and ventilation louvres (technical installations).

Tiles shall be repeatedly removable and replaceable.

Sample of ceiling tiles shall be handed over and approved by Client / Engineer.

Reference brand: Ecophon (Hygiene Performance A T24), Rockfon, Knauf.

Scope:

- Finish marked with code ACT-1H on the drawings.
- Sanitary rooms, locker rooms, toilets and showers, cleaning rooms.
- And as indicated on the finishing materials schedule.

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2.17.4. Suspended mineral tiles ceiling (600 x 600 / 600 x 1200 mm)

Suspended mineral tiles ceiling consisting of mineral ceiling tiles in a metal framework.

Suspended ceiling in office rooms, meeting rooms, corridors, sanitary rooms; mineral wool tiles / panels with surface structure (perforated) for sound absorption.

Metal framework visible. Direct hung grid suspension system composed of main beams and cross furring members that interlock to form a modular supporting framework.

Suspended ceiling hangers, zinc-coated steel.

Framework corrosion protected, and factory coated.

Thickness of mineral wool tiles minimal 12 mm;

Dimensions mineral wool tiles and framework: 600 x 600 mm^2 and 600 x 1200 mm2.

Along the walls metal L- profiles (and quality same as framework) and recessed wooden plinths (dimensions approx. 20 x 30 mm^2, painted black).

Including openings and strips for lighting fixtures and ventilation louvres (technical installations).

Fire rating EN 13501-1 A2 / A1.

Tiles shall be repeatedly removable and replaceable.

Sample of ceiling tiles shall be handed over and approved by Client / Engineer.

Reference brand: Armstrong “Cirrus”, color 589, with visible framework.

Scope:

- Finish marked with codes ACT-1 on the drawings.
- Acoustic mineral tiles suspended ceilings as indicated on the drawings.
- And as indicated on the finishing materials schedule.

2.17.5. Gypsum board walls office and meeting area

Metal C-framework, corrosion free suitable for rooms with high humidity. Framework electrolytic galvanized.

Gypsum- board panels shall be screwed on the metal C-framework.

Including all fixing materials, flashings, auxiliary structures, etc.

Fire resistance 60 minutes as indicated on the drawings. Fire resistance of partition walls shall be provided with certificates.

Note: In case of installation of fire-resistant doors and/or -inspections hatches as indicated in*2.5.6 Fire resistant swinging doors* . The fire-resistant gypsum board walls, auxiliary steel structures, -trimmers, etc. shall be installed to receive the appropriate licences and certificates. Details of the walls for installation of fire-resistant door frames and fire dampers shall be constructed according to the specifications and details of the supplier / manufacturer.

Gypsum-board panels in water resistant quality.

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In wet rooms: board panels suitable for high humidity.

Gypsum board panels and finishing shall be suitable for wall paint and/or ceramic wall-tiles.

Total thickness of wall shall be 150 – 200 mm, the wall layers shall consist of:

- Metal C-framework, thickness 100 – 150 mm, dimensions depending on the height of the walls.
- Vertical framework c/c 300 mm, horizontal load 25 kg/m^2.
- Fire resistant walls shall be provided with filling material of mineral wool.
- Noise insulating walls shall be provided with filling material of mineral wool.
- Two layers of 12.5 mm gypsum board on both sides of metal stud framing.
- Joints of the first- and second layer of gypsum board shall not be above each other.
- Overlap of gypsum boards minimal 300 mm.

Finish: seams and fastening points: finished smooth and flush with surface. Including special joint sealants, tapes and joint-fillers, finish shall be suitable for wall paint.

Additional wood for structures / facilities shall be included (technical installation).

Exterior corners: corner protection.

Parapet and covers, against the inside of closed parts of outside facades and as indicated on the drawings, shall be provided with gypsum board walls with double gypsum-board only on the inside and mineral wool filling material between the metal C-framework. Location (scope): office and meeting rooms, break rooms, locker rooms, staircase, on the ground floor and first floor in the Back of House. One of the two plasterboards shall be of a heavier type. Filling with mineral wool at least 60 % of the total area.

In areas of future installation of TV screens, furniture, sanitary utensils and other heavy items, the gypsum board wall should be reinforced with OSB panel

Reference brand gypsum board: Knauf, Rigips.

Scope:

- Office and meeting rooms, break rooms, locker rooms, toilets and showers, as indicated on the drawings.
- And as indicated on the finishing materials schedule.

2.17.6. White Space suspended ceiling

Technical seismic ceiling system designed for critical environments such as data centers, compliant with current structural regulations (NTC 2018, Eurocodes) for ICT infrastructure.

Technical Features

Seismic Ceiling System Scope: Modular, technical, and inspectable ceiling system mounted on metal profiles with seismic hangers, suitable for safe integration of electrical, HVAC, and data cabling systems.

Supporting Frame: Primary and secondary structure in galvanized steel or corrosion-resistant alloy, sized to support high dynamic and static loads, including vibration absorption systems.

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The main grid is composed by MT-40 DU (double unslotted) primary and secondary channels, connected to each other is two possible layouts:

- 1-layer system: connection with MT-CC-40-D, U channel-to-channel connection
- 2-layer system: connection with MT-CT-H5, flat cross channel connector

The spacing between two primary or secondary channels are 1,2m center-to-center.

- Static Vertical Hangers: Equipped with M12 threaded rods vertical hangers, furnish with MQI-AS/M12 turnbuckle necessary for vertical regulation and adjustments.

The connection with primary channel shall be realized with MT-AS-B M12 threatened connection. The connection with primary structure, shall be realized according to the admitted fixing areas identified in the precast concrete element technical statements.

- Seismic Bracings: Equipped with specific rigid elements, composed by a vertical rigid MT-40 D channel and MT-40 bracings. The vertical MT-40-D channel shall be connected to primary channels with MT- connection between MT-C-L2 or MT-C-LL2 angle connectors and connected to the primary structure with MT-B-O2 baseplate and mechanical anchors.
- Panels: Main supporting frames are completed with Knauf tiles 1150x575mm, connected with specific accessories that create interface between the main grid and tiles.
- Hatches & Accessible Modules: Provided for rapid inspection of integrated systems, additional side-mounted hooks allowing the ceiling panel to be safely lowered and suspended.

Required Performance

- Compliance with local and international seismic regulations (NTC 2018, Eurocodes).
- Load capacity 240 kg/m^2.

Execution Method

- Prior structural evaluation of base material and main structure.
- Installation following manufacturer's instructions and approved layout plans.
- Static and dynamic system testing, including technical report and seismic certification.
- Technical Requirement: to validate the technical proposal, the following documents shall be provided:
- Technical reports for the modular systems
- ill of material of the system
- Executive drawings of typical areas
- Executive drawings and positioning of seismic bracings

Structural grid:

- Structural grid: 600 x 1200 mm2, supported with spacing of 1200 x 1200 mm2 to structure above.
- Connection to perimeter walls with special fixed perimeter angles.
- Grid system with continuous threaded ¼" – 20 top, and M10 bottom channels.
- White painted finish.

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Reference brand: Hilti

Scope:

- Finish marked with code ACT-2a, ACT-2b on the drawings
- In the White spaces of the datacentre. Ceiling tiles in parts of white space ceilings as indicated on the drawings.
- And as indicated on the finishing materials schedule.

2.17.7. Suspended mineral tiles ceiling (600 x 1800 mm2)

Suspended mineral tiles ceiling consisting of mineral ceiling tiles in a metal framework.

Suspended ceiling in office rooms, meeting rooms, corridors, sanitary rooms; mineral wool tiles / panels with surface structure (perforated) for sound absorption.

Metal framework:

- Framework at the end joints shall be made as a wide grid, visible, with a width of approx. 100 mm, to which internal partition walls can be connected.
- Framework of longitudinal joints not visible.

Direct hung grid suspension system composed of main beams and cross furring members that interlock to form a modular supporting framework.

Suspended ceiling hangers, zinc-coated steel.

Framework corrosion protected, and factory coated.

Thickness of mineral wool tiles minimal 12 mm.

Dimensions mineral wool tiles and framework: 600 x 1800 mm2.

Along the walls metal L- profiles (and quality same as framework) and recessed wooden plinths (dimensions approx. 20 x 30 mm^2, painted black or white).

Above the wide grid elements, acoustic pressure baffles shall be installed, at the locations of the inside partition walls, from the wide grid tot the underside of the concrete floor or roof. Noise insulation minimal 22 dB.

Including openings and strips for lighting fixtures and ventilation louvres (technical installations).

Fire rating EN 13501-1 A2 / A1.

Tiles shall be repeatedly removable and replaceable.

Sample of ceiling tiles shall be handed over and approved by Client / Engineer.

Reference brand: Armstrong “Cirrus”, color 589, with visible framework.

Scope:

- Acoustic mineral tiles suspended ceilings as indicated on the drawings.
- And as indicated on the finishing materials schedule.

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2.17.8. Acoustic metal baffles system ceiling

Acoustic metal baffles system ceiling, consisting of:

- Metal box shaped baffels with acoustic absorption material, pre-painted, and including end-caps.
- Length of the baffels: as long as possible, joints in baffles shall be avoided.
- Clamps, stabilisation brackets and stabilisations profiles.
- In height adjustable hangers.

Acoustic ratings: αw = 0.65 (H).

Baffle dimensions: 1200 x 600 x 40 mm.

C/c distance of baffles: according to the drawings and to the supplier.

Colour: Standard paint colour.

Repeatedly (de)mountable.

Easy plenum access.

The reverberation time in the Silo shall be T ≤ 1.0 seconds (target range). Minimal required area baffle ceiling in the Silo: 36 m2 (T = 0.46 seconds).

The reverberation time in the Lobby shall be T ≤ 1.5 seconds (target range). Minimal required area baffle ceiling in the Lobby: 36 m2 (T = 0.54 seconds).

The reverberation time in the Conference room shall be T ≤ 1.0 seconds (target range). Minimal required area baffle ceiling in the Silo: 33 m2 (T = 0.50 seconds).

Reference brand: Ecophon Solo Baffles.

Scope:

- And as indicated on the finishing materials schedule.

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2.18. Wall systems general

Metal framework corrosion free suitable for standard office and meeting rooms, industrial applications and rooms with a high humidity. Framework electrolytic galvanized.
In rooms with an external climate and/or a high humidity, all wall system materials shall be waterproof and corrosion resistant.
Conduits, cables, pipes, ducts, etc. for technical installations shall be installed inside wall system in such a way that these elements are concealed. Aforementioned is not applicable for walls of technical rooms.
Including all fixing materials, flashings, auxiliary structures, etc.
Samples of all wall types shall be made up and provided for approval by the Employer and/or Engineer; sample shall be minimum 4 m^2.
Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
Establish and maintain environmental conditions for application and finishing gypsum and cement board to comply manufacturer's recommendations.
Qualify certificates shall be provided by the Contractor on all materials and handed over to the Employer / Engineer for approval.
Maximum deviation for walls 5 m length or shorter: 8 mm.
Maximum deviation for walls over 5 m length: 12 mm.
Maximum deviation in any 2.5 m height of wall: 8 mm.

2.18.1. Gypsum board walls, fire rated

Metal C-framework, corrosion free suitable for rooms with high humidity. Framework electrolytic galvanized.
Gypsum- board panels shall be screwed on the metal C-framework.
Including all fixing materials, flashings, auxiliary structures, etc.
Fire resistance 60 minutes when indicated on the drawings. Fire resistance of partition walls shall be provided with certificates.
Burglar resistance class 2 according to UNI EN 1627; shall be provided with applicable certificate.
Note: In case of installation of fire-resistant doors and/or -inspections hatches as indicated in *Fire resistant swinging doors* in fire resistant gypsum board walls, auxiliary steel structures, trimmers, etc. shall be installed to receive the appropriate licences and certificates. Details of the walls for installation of fire-resistant door frames and fire dampers shall be constructed according to the specifications and details of the supplier / manufacturer and shall be provided with “Certificate”.
Gypsum-board panels in water resistant quality.
Gypsum board panels and finishing shall be suitable for wall paint and/or ceramic wall-tiles.
Connections of gypsum-board walls with upper floors and beams shall be flexible (deflection head); no damage may be caused to the walls if beams or floors are bending as a result of own and variable loads.

Total thickness of wall shall be 150 mm, the wall layers shall consist of:

- Metal C-framework, thickness 100 mm, dimensions depending on the height of the walls.
- Vertical framework c/c 300 mm, horizontal load 25 kg/m^2.
- Fire resistant walls shall be provided with filling material of mineral wool and certificates.
- Noise insulating walls shall be provided with filling material of mineral wool.
- Two layers of 12.5 mm gypsum board on both sides of metal stud framing.
- Joints of the first- and second layer of gypsum board shall not be above each other.
- Overlap of gypsum boards minimal 300 mm.

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Burglar resistance class 2 (RC2) shall be achieved by applying one of the following systems:

- Diamond gypsum board panels and steel sheets (2 x 0.5 mm thickness) to be installed between the double gypsum board panels. Reference brand: Knauf.
- Habito gypsum board panels and accompanying metal C-framework. Reference brand: Rigips

Finish: seams and fastening points: finished smooth and flush with surface. Including special joint sealants, tapes and joint-fillers, finish shall be suitable for wall paint.

Additional wood for structures / facilities shall be included (technical installation).

Exterior corners: corner protection.

Vapor barrier: PE foil thickness approx. 0.1 mm, to be installed between the two layers of gypsum-board panels at the white space / data-hall side, over total area of gypsum-board partition wall.

Reference brand gypsum board: Knauf, Rigips.

Scope:

- Gypsum board walls of technical rooms as indicated on the drawings.
- And as indicated on the finishing materials schedule.

2.18.2. Gypsum board walls

Metal C-framework, corrosion free suitable for rooms with high humidity. Framework electrolytic galvanized.

Gypsum- board panels shall be screwed on the metal C-framework.

Including all fixing materials, flashings, auxiliary structures, etc.

Fire resistance 60 minutes when indicated on the drawings. Fire resistance of partition walls shall be provided with certificates.

Note: In case of installation of fire-resistant doors and/or -inspections hatches as indicated in *Fire resistant swinging doors* in fire resistant gypsum board walls, auxiliary steel structures, trimmers, etc. shall be installed to receive the appropriate licences and certificates. Details of the walls for installation of fire-resistant door frames and fire dampers shall be constructed according to the specifications and details of the supplier / manufacturer and shall be provided with “Certificate”.

Gypsum-board panels in water resistant quality.

Gypsum board panels and finishing shall be suitable for wall paint and/or ceramic wall-tiles.

Connections of gypsum-board walls with upper floors and beams shall be flexible (deflection head); no damage may be caused to the walls if beams or floors are bending as a result of own and variable loads.

Total thickness of wall shall be 150 mm, the wall layers shall consist of:

- Metal C-framework, thickness 100 mm, dimensions depending on the height of the walls.
- Vertical framework c/c 300 mm, horizontal load 25 kg/m^2.
- Fire resistant walls shall be provided with filling material of mineral wool and certificates.
- Noise insulating walls shall be provided with filling material of mineral wool.

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- Two layers of 12.5 mm gypsum board on both sides of metal stud framing.
- Joints of the first- and second layer of gypsum board shall not be above each other.
- Overlap of gypsum boards minimal 300 mm.

Finish: seams and fastening points: finished smooth and flush with surface. Including special joint sealants, tapes and joint-fillers, finish shall be suitable for wall paint.

Additional wood for structures / facilities shall be included (technical installation).

Exterior corners: corner protection.

Vapor barrier: PE foil thickness approx. 0.1 mm, to be installed between the two layers of gypsum-board panels at the white space / data-hall side, over total area of gypsum-board partition wall.

Reference brand gypsum board: Knauf, Rigips.

2.18.3. Openings in gypsum board walls

Openings in metal stud walls, thickness 150 - 175 mm.

Gypsum board walls consisting of a metal framework and double plated gypsum and/or cement board on both sides.

Openings including all necessary supporting structures, such as additional steel frame bars when necessary.

Openings and other provisions for technical installations shall be defined by the Contractor and shall be included in the price (Bill of Quantities). The unit rates below for various sizes of openings and provisions are only for settlement in the event of changes at the request of the Engineer and/or Employer. Closing of the openings shall not be included in the unit rates for the openings.

Location of openings:	***Dimensions of the opening (diameter or w x h):***	***Number (pieces):***
Gypsum board walls	diameter 50 mm	30
	diameter 100 mm	30
	diameter 200 mm	30
	diameter 300 mm	30
	150 x 150 mm^2	30
	200 x 200 mm^2	30
	200 x 400 mm^2	30
	600 x 600 mm^2	30

2.18.4. Toilet cubicles

Prefabricated toilet cubicles, including doors and door door-furniture.

Outer surface in stainless steel (1.4301).

Low maintenance, hygienic, suitable for use with disinfectants and bacteriostatic.

Side profiles and head rails in stainless steel or black.

Including hinges and handles stainless steel, toilet lock fully galvanised. Doors flush fitted.

One coat hook and door buffer per cubicle.

Height approximately 2080 mm including 100 mm floor clearance.

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Partition panels, uprights, pilasters and doors made in sandwich construction.

Panels with internal all-round frame of rigid PVC sections and cavity filled with CFC-free polyurethane foam.

Scope:

- as indicated on the drawing and on the finishing materials schedule.

2.18.5. Frameless glass partition walls

Single glazed mullion- and post-free partitioning system, consisting of upper and lower extruded profiles, silicone rubber gaskets and tempered or laminated glass elements, and including glass doors and metal door frames.

Width of the glass elements, approx. 800 – 1200 mm.

Glass panels ground flat all around, with chamfered edge.

Minimal glass thickness: 10 or 12 mm, 66.A2, laminated safety glass with acoustic foil.

Noise insulation: Rw minimal 38 dBA.

Fixation U-profiles: Aluminium, factory coated, 25 x 25 mm2. Rubber gaskets, colour black.

Aluminium door frames, factory coated. Tempered and laminated. Doorframes wall-height or door-height.

Doors including stainless steel or anodized aluminium ironmongery suitable for frameless glazing partition walls. Hinges 180 degrees openable.

Aluminium door frames and glass doors as described in paragraph 2.9.12 shall be part of these frameless glazing partition walls.

Reference brand: Alux Walls.

Scope:

- Frameless glazing partition walls and doors, Back of House as indicated on the drawings.

2.18.6. Steel framing with perforated metal sheet wall

Prefabricated metal sheet partition wall consisting of posts with fixation feet and perforated / solid metal panels.

All parts prefabricated, treated against corrosion and factory coated in colour. For colour see *paragraph* 2.11: interior colours.

Posts made of square steel tubes approx. 50 x 50 x 2 mm3 / 60 x 80 x 2 mm3, provided with mounting brackets and cover.

Perforated metal sheet elements consisting of a framework of steel box sections approx. 30 x 10 x 1 mm3 and/or 20 x 20 x 2 mm3 / steel angles 50 x 50 x 3 mm3, 5 mm apart, perforated / solid metal sheets with specifications:

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- Perforated screen - square holes 13 x 13 mm^2, 5mm apart, open 66% (above the suspended
- ceiling),
- Solid screen, closed (from 2800 mm + floor level up to suspended ceiling),
- Perforated screen - square holes 10 x 10 mm^2, 5 mm apart, open 45 % (from floor-level up to
- 2800 mm + floor level)

Width of the perforated / solid metal sheet elements approx. 900 and 1200 mm.

Including wall and corner connections, if applicable.

Including watertight plinth elements with a height of approx. 60 mm (as part of the water-bunds in the mechanical-galleries).

Reference brand: to be made according to specifications and drawings. Metadecor, MD Gate.

Scope:

- The perforated / solid metal partition walls in the data-halls / white spaces and adjacent rooms, as indicated on the drawings.

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2.19. Paint work

2.19.1. Paintwork General

Paintwork shall be applied continuously and in one operation to the entire painted surface.

Finish shall be applied so that there are no scaffold lines or other marks due to the application.

The mixing and application must follow the manufacturer's specifications.

Texture and colour as selected by Engineer and / or Employer; see paragraphs.

Applicable standards and rules:

- UNI 8681:1984 - Edilizia. Prodotti per sistemi di verniciatura, pitturazione, RPAC, tinteggiatura e impregnazione superficiale. Criteri generali di classificazione.
- UNI 8756:1985 - Edilizia. Prodotti per sistemi di verniciatura, pitturazione, RPAC, tinteggiatura, impregnazione superficiale e misti. Caratteristiche di identificazione e metodi di prova.
- UNI 8757:1985 - Edilizia. Prodotti per sistemi di verniciatura, pitturazione, tinteggiatura, impregnazione superficiale e misti. Criteri per l'informazione tecnica.
- UNI 8758:1985 - Edilizia. Sistemi di verniciatura, pitturazione, tinteggiatura, impregnazione superficiale e misti. Criteri per l'informazione tecnica.
- UNI 10997:2002 - Edilizia - Rivestimenti su supporti murari esterni di nuova costruzione con sistemi di verniciatura, pitturazione, RPAC, tinteggiatura ed impregnazione superficiale - Istruzioni per la progettazione e l'esecuzione

2.19.2. Paintwork on walls, excluding White spaces

Base: skim coated or plastered cellular concrete blockwork walls, fair faced cellular concrete panel walls, prefabricated concrete walls, in situ concrete walls, gypsum board walls.

Covering system:

- 1 coat priming / fixing agent.
- 1 coat topcoat.

Substrate corrections: fill air holes.

Application: According to specifications of the manufacturer / supplier.

Level of gloss: matte.

Dust free.

Fixing agent: water based. Reference brand: Sikkens Building Paints; Alpha Aquafix, Sigma Coatings; type Sigmafix Universal, BASF, DAW.

Topcoat: water based. Reference brand: Sikkens Building Paints; Alphacryl matte, Sigma Coatings; Sigma Façade Topcoat, BASF, DAW.

Scope:

- All internal walls, including concrete columns, excluding walls in White spaces.
- And as indicated on the finishing materials schedule.

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2.19.3. Paintwork on walls in White spaces

Base: skim coated or plastered cellular concrete blockwork walls, fair faced cellular concrete panel walls, prefabricated concrete walls, in situ concrete walls, gypsum board walls.

Covering system:

- 1 coat priming / fixing agent.
- 1 coats topcoat.

Substrate corrections: fill air holes.

Moving joints shall be finished with paintable sealant.

Application: According to specifications of the manufacturer / supplier.

Level of gloss: matte.

Dust free.

As per Owner Project Requirements (OPR – v2.0) – chapter 2.40, please guarantee anti-moisture treatment for the Data Modules' walls.

Primer: water based. Reference brand: Sikkens Building Paints; Alpha Aquafix, Sigma Coatings; type Sigmafix Universal, BASF, DAW.

Topcoat: water based. Reference brand: Sikkens Building Paints; Alphacryl matte, Sigma Coatings; Sigma Façade Topcoat, BASF, DAW.

Scope:

- All internal walls in White spaces, including concrete columns.
- And as indicated on the finishing materials schedule.

2.19.4. Paintwork on concrete ceiling, excluding White spaces

Base: concrete ceiling and concrete beams (prefabricated concrete, in situ concrete).

Covering system:

- 1 coat priming/fixing agent.
- 1 coat topcoat.

Substrate corrections: fill air holes.

Joints between concrete elements shall be cleaned and finished smoothly.

Application: According to specifications of the manufacturer / supplier.

Level of gloss: matte.

Dust free.

Primer: water based. Reference brand: Sikkens Building Paints; Alpha Aquafix, Sigma Coatings; type Sigmafix Universal, BASF, DAW.

Topcoat: water based. Reference brand: Sikkens Building Paints; Alphacryl matte, Sigma Coatings; Sigma Façade Topcoat, BASF, DAW.

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Scope:

- Underside concrete ceilings corridors along white spaces.
- Underside of precast concrete stair elements and platforms.
- Finish marked with code "EXPOSED" on the drawings.
- And as indicated on the finishing materials schedule.

Note: Where suspended ceilings will be installed the concrete ceilings (including concrete beams) do not have to be painted.

2.19.5. Paintwork on concrete ceiling, in White spaces

Base: concrete ceiling and concrete beams (prefabricated concrete, in situ concrete).

Covering system:

- 1 coat priming/fixing agent.
- 1 coat topcoat.

Substrate corrections: fill air holes.

Joints between concrete elements shall be cleaned and finished smoothly.

Application: According to specifications of the manufacturer / supplier.

Level of gloss: matte.

Dust free.

Primer: water based. Reference brand: Sikkens Building Paints; Alpha Aquafix, Sigma Coatings; type Sigmafix Universal, BASF, DAW.

Topcoat: water based. Reference brand: Sikkens Building Paints; Alphacryl matte, Sigma Coatings; Sigma Façade Topcoat, BASF, DAW.

Scope:

- Concrete ceiling finishing in White spaces, including concrete beams.
- Finish marked with code "EXPOSED" on the drawings.
- And as indicated on the finishing materials schedule.

2.19.6. Paintwork water resistant plywood

Base: Water resistant plywood according to paragraph 2.19.6 Paintwork water resistant plywood.

Covering system:

- 2 coats priming/fixing agent.

Application: According to specifications of the manufacturer / supplier.

Level of gloss: matte.

Fixing agent: water based.

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Reference brand: Sikkens Building Paints; Rubbol BL Primer, Sigma Coatings; type Sigma S2U Nova Primer, BASF, DAW.

Scope:

- Water resistant plywood at exterior windows, -doors and ventilation louvres as indicated on drawings.
- And as indicated on the finishing materials schedule.

2.19.7. Paintwork wooden elements

All wooden elements shall be painted.

- All wooden interior elements shall be painted with primer layer.
- Visible parts of wooden interior elements shall be painted with primer layer and topcoat layer.
- Water resistant plywood at exterior windows, doors and ventilation louvers, installed and already primer-coated by the CSA Shell & Core Contractor, shall be painted with topcoat layer.

Application: According to specifications of the manufacturer / supplier.

Level of gloss: matte.

Fixing agent: water based.

Openings, drilling and screw holes, etc. to be filled with water-based putty.

Connection joints to be finished with paintable sealant.

Reference brand: Sikkens Building Paints, Sigma Coatings, BASF, DAW.

Scope:

- Wooden interior elements.
- And as indicated on the finishing materials schedule.

2.19.8. Woven glass fibre wallpaper

Woven glass fibre wallpaper rolls, 1 meter wide, 25 and 50 m^2.

Weight: 115 – 125 gram/m^2.

Diamond pattern. Paintable. Including glue.

Reference brand: Scandia, Fresco.

Scope:

- All walls in the office and meeting area.
- And as indicated on the finishing materials schedule.

2.20. Gutters and rainwater disposal

2.20.1. General

Rainwater outlets, downpipes, overflows adapters, etc. shall be designed and installed according to the local and national requirements and as indicated on the drawings.

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2.20.2. Rainwater outlets / downpipes, external, normal system

Roof drainage systems consisting of:

- Downpipes: pre-galvanized (and precoated) steel, sheet thickness minimal 1.0 mm, or powder coated aluminium, sheet thickness minimal 1.0 mm.
- Parapet outlets: Stainless steel, sheet thickness minimal 1.0 mm, or powder coated aluminium, sheet thickness minimal 2 mm.
- Emergency overflows: Stainless steel, sheet thickness minimal 1.0 mm, or powder coated aluminium, sheet thickness minimal 2 mm.
- Gutters: pre-galvanized and precoated steel, sheet thickness minimal 1 mm, or powder coated aluminium, sheet thickness minimal 1.5 mm.

Including roof gully drains, outlets through parapets and adapters between outlets and downpipes.

Downpipes diameter DN 75, 110, 125 mm, as indicated on the drawings.

Dimensions of outlets shall be corresponding the diameters of downpipes.

Outlets including provision / plates suitable for watertight and durable connection with FPO roof membrane (and if applicable vapour barrier).

Form of connection outlets and downpipes: sleeve joint.

Outlets including pebble stone barrier / grid.

Including all fixings, connections elements, brackets, etc.

Maximal distance of fixation brackets: 1500 mm.

Downpipes shall be provided with a watertight inspection / deblocking hatch just above ground level.

Dimensions of gutter elements: approximately (rectangular) 80 x 160 mm^2 or (circular) diameter 120 mm.

Maximum distance of gutter support-brackets: 1000 mm.

Rainwater down pipes of roof lift-shaft / staircase shall dewater on main roof.

Rainwater down pipes of corrugated steel roof with gutters shall dewater on main roof.

Emergency overflows according calculation of Engineer and as indicated on the drawings.

Calculations of the downpipes and emergency overflows shall also be made by the supplier/manufacturer on behalf of the Contractor and shall be checked and approved by the Engineer.

Installation shall be according to the instructions and specifications of the supplier/manufacturer.

The emergency overflow system shall be calculated to handle the complete 100 years rainfall, based on the standards UNI EN 12056.

The run-off factor for green roofs with thickness < 100 mm and inclination < 5 degrees shall be 0.5 according to UNI EN 12056.

Emergency overflows: opening in parapet, made of stainless-steel sheet thickness 1,0 mm, with welded sheet for fixation in TPO / FPO roofing layers.

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Reference brand: Sita Turbo.

Scope:

- Outlets, downpipes and gutters, emergency overflows, as indicated on the drawings.

2.21. Lift installations

2.21.1. Lifts for goods and persons

Lifts for vertical transport of goods, without lift engine room. Transport of persons shall also be possible.

- Minimal 5000 kg (five-thousand kilograms)
- Speed 1.0 m/s1.
- 50 rides per hour shall be possible.
- Cable for security access control shall be provided.
- Emergency alarm and emergency intercom shall be provided.
- Ventilation shall be provided at a rate 200 m^2/h.
- Stop places shall be levelled with the service levels, maximal tolerance of 5 mm.
- Horizontal gap between lift cage and lift shaft shall be maximal 20 mm.
- Telescopic doors and framing shall be of stainless steel (brushed).
- Finishes shall be aluminium and/or stainless steel with chequered plate floor finish and wall sides 1000 mm high from cage floor.
- Lighting shall be provided inside the cage.
- Level indicator shall be provided in the cage.
- Level selection controls to inside of cage and exterior of lift on each level.
- To comply with all EN 1570 and safety requirements and applicable local standard requirements and CE-marking.
- Lift shaft width: 3500 mm.
- Lift shaft depth: 4400 mm.
- Pit depth: minimal 1800 mm, measured from lowest door threshold till finished floor.
- Clear shaft height: 12000 - 19000 mm, measured from highest door threshold till bottom side of roof.
- Cage dimensions (minimm): 2400 x 3000 mm2
- Clear internal height: 2800 mm.
- Clear door dimensions (minimum): 2100 mm x 2800 mm
- Doors on one site, fire resistance shall be according to “Fire protection certificate”: no fire resistance.
- Freight elevator: 2 stops; level 0, level 1
- Freight elevator (to the roof): 3 stops; level 0, level 1, roof
- Including collision protection for the door frames by mounting steel posts on the floor.

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Lift shaft dimensions, as indicated on the drawings, shall be checked by the Contractor / lift-supplier, based on actual information of the lift.

Material lift shafts for fixation of lift installation: concrete walls, floor and roof.

Including all to be cast in provisions for push buttons, cable conduits, smoke exhaust, fixations, etc.

Reference brand: Kone

Scope:

- Lifts as indicated on the drawings.

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2.21.2. Column mounted slewing JIB cranes on roof platform

Product description:

- Prefabricated hoist crane, to be installed on Roof and Equipment Yard platforms.
- Suitable for outdoor installation and use.
- Hot dipped galvanized or coated, corrosion class 3. Colour according to paragraph *1.12 External colours.*
- Capacity: 500 kg.
- Outreach: 3.0 meter. Arm position shall be lockable.
- Column mounted, column height approx. 4 meter, fixation on steel structure of roof platform.
- Rotation range: minimal 240 degrees.
- Including all required certificates for operation.
- EN 13001 hoisting class HC2.
- EN 13001 stability class S2.
- Electrically operated hoist, including electrical cables, steel hoisting cable and safety hook.
- Electric chain host; lifting speed 2 (main and creep), lifting height: 9 meter. Motor: 400 V / 50 Hz, protection class IP 55. Built in contactor-control 24 V, including hoist limit switch for upper and lower hook position, including operation hour counter.
- Movement of hoist to arm also electrically operable, with round or flat cable trailing system.
- Optional: Electrical slewing gear.
- Including all necessary safety and maximal load signs.

Reference brand: Vetter Krantechnik; Praktikus PS / Assistant AS, Abus Crane-systems.

Scope:

- Hoisting crane on roof platform, as indicated on the drawings.

2.22. Fixed furniture (branding items)

In this paragraph described fixed furniture and other items (“branding items”) shall be delivered and installed.

Details, materials, colours, as indicated in the “STACK_EMEA_BrandGuide v7.0 FULL”, and in Steer v2 BoD.

For floor, wall and ceiling finishes, see the relevant paragraphs in this SoR-document.

Contractor shall make a detailed design for each element, which needs to be approved by the Engineer and/or Employer.

All provisions, openings, conduits, etc. for mechanical, electrical, security, data, fire-safety installations shall be included. Electrical and data components are included in the E-package and shall be coordinated by the Contractor.

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3. Dimensional tolerances

In general, the dimensional tolerance specifications of the following Italian standards, are to be applied to the building:

DPR n. 380/2001 Testo unico edilizia

UNI 10462 – Elementi edilizi – Tolleranze dimensionali – Definizione e classificazione

UNI 10463 – Elementi edilizi – Tolleranze dimensionali – Compatibilità della tolleranza naturale di processo dedotta statisticamente rispetto alla tolleranza di progetto

UNI 10464 – Elementi edilizi – Tolleranze dimensionali – Aliquote di casi favorevoli rientranti nell'intervallo di valori definiti dalla tolleranza naturale di processo per prodotti di serie

If several requirements apply, the smaller tolerances/deviations are applicable.

For structural elements and details please see the Structural SOR documents.

ENGINEER TEAMS:

DBA PRO. S.P.A.

Viale Felissent 20/D 31020

Villorba (TV)

Italy

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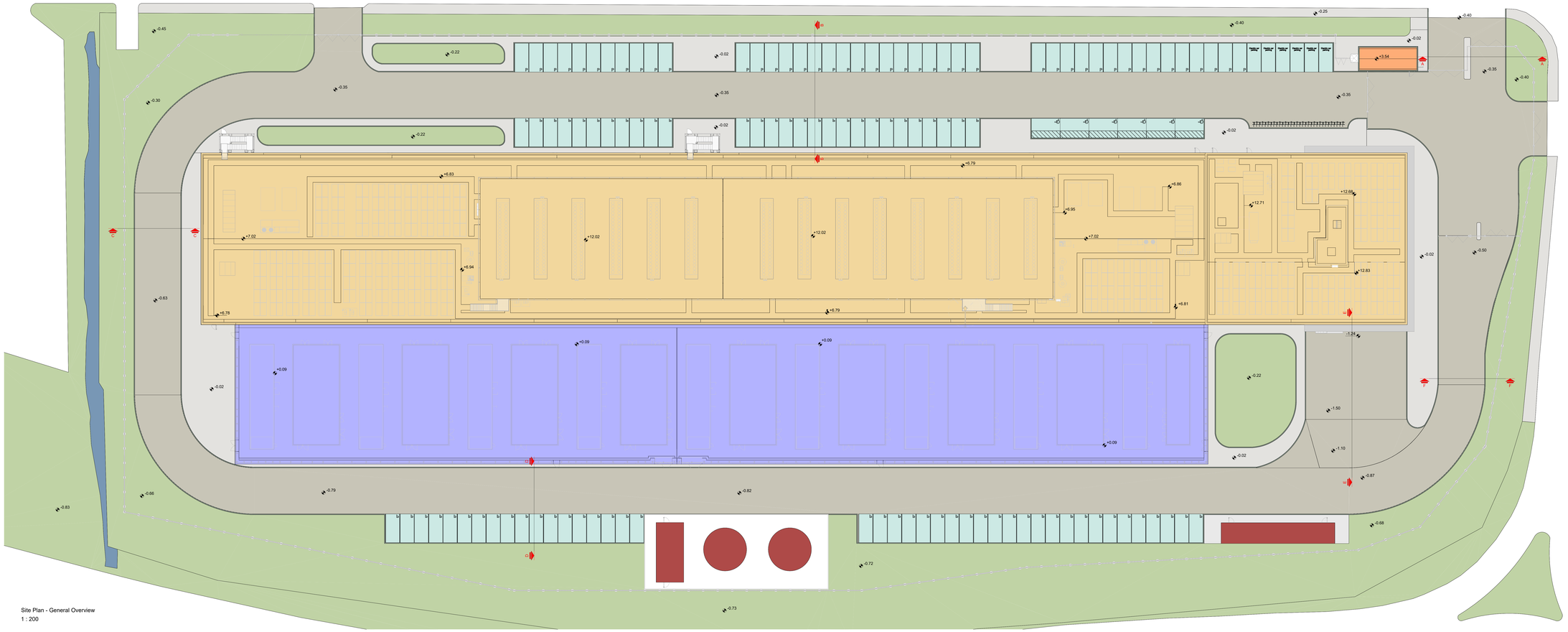
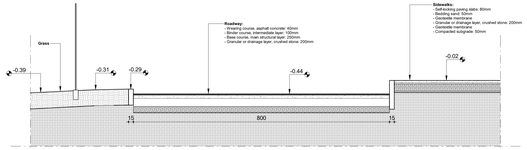
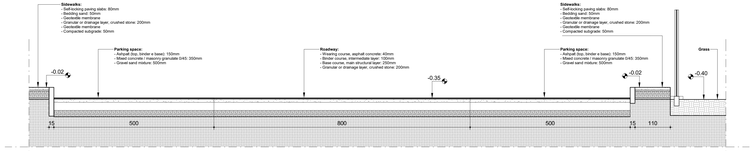


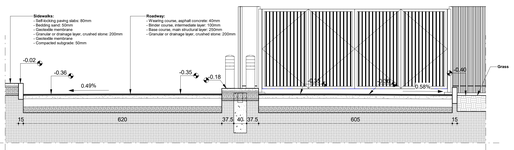
Site Plan - General Overview
1 : 200



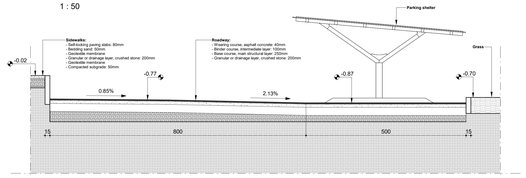
Road section CC
1 : 50



Road section EE
1 : 50



Road section AA
1 : 50



Road section CC
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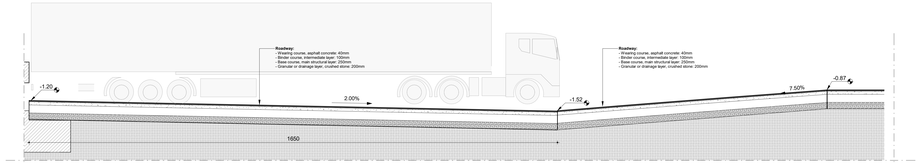
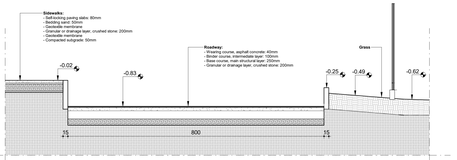


Road section EE
1 : 50



Road section FF
1 : 50

LEGEND

- Existing canal (roggia)
- Green area
- Roads
- Sidewalks
- Curbs
- Parkings
- Main building
- Guardhouse
- Sprinkler room and tanks
- External Equipment Yard

Il presente elaborato è valido solo in coordinamento con tutte le altre discipline specialistiche con le quali deve essere verificata la conformità. Tutte le misure ed eventuali variazioni rispetto al presente elaborato devono essere verificate in cantiere.
This plan only valid in connection & coordination with the plans of all other Specialist disciplines, and must be checked for conformity with these plans. Deviations in dimensions must be clarified with the site management.

CLIENT / COMMITTENTE:

STACK INFRASTRUCTURE

STACK MIL07 Datacenter

Via Lombardia, 27010 Siziano PV

BIM Data Coordinator Consulente BIM del Cliente
ARC:BIM
2nd Floor, 140 St John Street - London, GB

DESIGN TEAM / TEAM DI PROGETTO

CONSULTING DESIGNER / PROGETTISTA

ARCHITECTURAL DESIGN / PROGETTO ARCHITETTONICO
Arch. Daniele De Bettin
DBA S.p.A.
Viale Liguria 24, Milano (MI)

STRUCTURAL DESIGN / PROGETTO STRUTTURE
Ing. Diego Serafini
DBA S.p.A.
Viale G. G. Felissent 20D, Vittorio (TV)

MECHANICAL DESIGN / PROGETTO IMP. MECCANICI ED ELETTRICI
Ing. Luca Busetti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

ELECTRICAL DESIGN / PROGETTO IMP. ELETTRICI E SPECIALI
Ing. Sandra Buserti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

COORDINATION / COORDINAMENTO
PM - Alessandro Masaro
BIM Manager - S. Di Biase
BIM Coordinator - R. Solano

INTEGRATED DESIGN / PROGETTAZIONE COORDINATA

DBA

DBA S.p.A.
Sede legale:
Via Liguria 24
22063 S. Maria di Cadoro (lfi.)
Sede secondaria:
Via Natale Battaglia 10
20127 Milano (MI)
tel. 02/26113311 - fax 02/26113300
certificata ISO 9001:2015 - RINA - n.0021015-15 Milano n.11-11991/0

PROJECT CODE	ORIGINATOR	FUNCTIONAL SPACE	SPACIAL S.	FORM	DISCIPLINE	TYPE	NUMBER
MIL07	DBA	EX	RL	DR	A	10	004

NOTES / NOTE:

DBA PROJECT CODE	PROJECT STAGE	STATUS / STATO	REVISION / REVISIONE	DATE / DATA
13038001	WS3	S4	P01	07/11/25

REV.	IM	TRA	REVISION DESCRIPTION / DESCRIZIONE REVISIONE	REVISION DATE
REV.				REVISION DATE

Client / Committente: STACK INFRASTRUCTURE

Oggetto:
Esterni
Livello strada
Planta cordoli, marciapiedi, strade e sezioni tipiche strade

Subject:
External
Road Level
Curbing, Pathways, Roadways plan and Roads Typical Sections

AD +2 (841*594)
SCALE / SCALA: variable
DRAWN / DISEGNATO: D. Spadazzi
CHECKED / CONTROLLATO: V. Braconi
APPROVED / APPROVATO: D. De Bettin

FILE NAME / NOME FILE: MIL07-DBA-EX-RL-DR-A-10004-P01.2

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Space Program / Programma Locali

Department	Name	Number	Area
BREAK ROOM			
Ground Floor 00-FFL			
BREAK ROOM	Break room / Area break	BRK02	30,64 m²
BREAK ROOM: 1			30,64 m²
CIRCULATION			
Ground Floor 00-FFL			
CIRCULATION	Corridor / Corridoio	COR01	141,20 m²
CIRCULATION	Corridor / Corridoio	COR02	583,25 m²
CIRCULATION	Corridor / Corridoio	COR03	420,55 m²
CIRCULATION	Freight elevator / Montacarichi	EVRA	15,40 m²
CIRCULATION	Freight elevator / Montacarichi	EVRB	15,40 m²
CIRCULATION	Internal Staircase / Scala interna	STRA	13,70 m²
CIRCULATION	External Staircase / Scala esterna	STRC	15,40 m²
CIRCULATION	External Staircase / Scala esterna	STRD	15,38 m²
First Floor 01-FFL			
CIRCULATION	Corridor / Corridoio	COR11	123,69 m²
CIRCULATION	Safe waiting area / Spazio calmo	STRB	2,36 m²
CIRCULATION: 10			1346,32 m²
CONFERENCE			
Ground Floor 00-FFL			
CONFERENCE	Conference Room / Sala conferenze	CON01	47,13 m²
CONFERENCE	Conference Room Storage / Magazzino sala conferenze	CON02	2,37 m²
CONFERENCE: 2			49,51 m²
CRITICAL SUPPORT			
Ground Floor 00-FFL			
CRITICAL SUPPORT	Generator / Gruppo Elettrogeno	GEN01	54,82 m²
CRITICAL SUPPORT	Generator / Gruppo Elettrogeno	GEN02	67,64 m²
CRITICAL SUPPORT	Generator / Gruppo Elettrogeno	GEN03	67,64 m²
CRITICAL SUPPORT	Generator / Gruppo Elettrogeno	GEN04	67,64 m²
CRITICAL SUPPORT	Generator / Gruppo Elettrogeno	GEN05	67,64 m²
CRITICAL SUPPORT	Generator / Gruppo Elettrogeno	GEN06	67,64 m²
CRITICAL SUPPORT	Generator / Gruppo Elettrogeno	GEN07	67,64 m²
CRITICAL SUPPORT	Generator / Gruppo Elettrogeno	GEN08	67,64 m²
CRITICAL SUPPORT	Generator / Gruppo Elettrogeno	GEN09	67,64 m²
CRITICAL SUPPORT	Mechanical gallery / Galleria meccanica	MEC01	328,03 m²
CRITICAL SUPPORT	Mechanical gallery / Galleria meccanica	MEC02	320,14 m²
CRITICAL SUPPORT	POD / POD	POD01	64,98 m²
CRITICAL SUPPORT	POD / POD	POD02	127,38 m²
CRITICAL SUPPORT	POD / POD	POD03	127,38 m²
CRITICAL SUPPORT	POD / POD	POD04	127,38 m²
CRITICAL SUPPORT	POD / POD	POD05	127,38 m²
CRITICAL SUPPORT	POD / POD	POD06	127,38 m²
CRITICAL SUPPORT	POD / POD	POD07	127,38 m²
CRITICAL SUPPORT	POD / POD	POD08	127,38 m²
CRITICAL SUPPORT	POD / POD	POD09	127,38 m²
CRITICAL SUPPORT: 20			2328,13 m²
DATA CENTER			
Ground Floor 00-FFL			
DATA CENTER	Data Hall / Sala Dati	DH01	1595,17 m²
DATA CENTER	Data Hall / Sala Dati	DH02	1583,79 m²
DATA CENTER: 2			3178,97 m²

Space Program / Programma Locali

Department	Name	Number	Area
ENTRANCE			
Ground Floor 00-FFL			
ENTRANCE	Break room / Area Break	BRK01	22,80 m²
ENTRANCE	Lobby / Atrio	LOB01	48,87 m²
ENTRANCE: 2			71,67 m²
EXTERNAL TECHNICAL AREA			
Ground Floor 00-FFL			
EXTERNAL TECHNICAL AREA	External equipment yard / Area esterna apparecchiature impiantistiche	EQP01	2284,20 m²
First Floor 01-FFL			
EXTERNAL TECHNICAL AREA	Roof / Copertura	ROFR1	4817,31 m²
Gantry Roof RG-FFL			
EXTERNAL TECHNICAL AREA	Chiller Platform / Piattaforma Gruppi Frigo	CHLRG	2064,46 m²
Roof Level R2-FFL			
EXTERNAL TECHNICAL AREA	Copertura Uffici / Office Roof	ROFRF	934,95 m²
EXTERNAL TECHNICAL AREA: 4			10100,92 m²
MMR/POE			
Ground Floor 00-FFL			
MMR/POE	Communications Equipment Room / Sala Apparati di Telecomunicazione	CER01	35,30 m²
MMR/POE	Communications Equipment Room / Sala Apparati di Telecomunicazione	CER02	26,85 m²
MMR/POE	Meet Me Room / Meet Me Room	MMR01	16,34 m²
MMR/POE	Meet Me Room / Meet Me Room	MMR02	10,44 m²
MMR/POE	Point of Entry / Ingresso Fibra	POE01	19,76 m²
MMR/POE	Point of Entry / Ingresso Fibra	POE02	15,83 m²
MMR/POE: 6			124,52 m²
NON CRITICAL SUPPORT			
Ground Floor 00-FFL			
NON CRITICAL SUPPORT	Electrical Room / Locale Elettrico	ER01	20,13 m²
NON CRITICAL SUPPORT	Electrical Room / Locale Elettrico	ER02	21,92 m²
NON CRITICAL SUPPORT	Fire Command Room / Locale Controllo Antincendio	FCR01	13,71 m²
NON CRITICAL SUPPORT	Sprinkler Room / Locale Sprinkler	SPK01	18,85 m²
NON CRITICAL SUPPORT	Sprinkler Room / Locale Sprinkler	SPK02	15,99 m²
NON CRITICAL SUPPORT	Water Room / Ingresso Acqua	WAT01	14,07 m²
NON CRITICAL SUPPORT: 6			104,66 m²
OFFICE (CUSTOMER)			
First Floor 01-FFL			
OFFICE (CUSTOMER)	Office / Ufficio	OFF11	219,65 m²
OFFICE (CUSTOMER)	Office / Ufficio	OFF12	118,62 m²
OFFICE (CUSTOMER): 2			338,27 m²
OFFICE (STACK)			
Ground Floor 00-FFL			
OFFICE (STACK)	SOC storage / Ripostiglio SOC	SOC01	11,71 m²
OFFICE (STACK)	Security Operation Center / Ufficio Operativo Sicurezza	SOC02	39,65 m²
OFFICE (STACK)	SOC Manager Office / Ufficio Manager SOC	SOC03	11,86 m²
First Floor 01-FFL			
OFFICE (STACK)	Office / Ufficio	OFF13	105,02 m²
OFFICE (STACK): 4			168,24 m²

Space Program / Programma Locali

Department	Name	Number	Area
OTHER			
Ground Floor 00-FFL			
OTHER	Shaft / Cavedio	SHFA	7,93 m²
OTHER	Shaft / Cavedio	SHFB	5,89 m²
OTHER	Shaft / Cavedio	SHFC	2,10 m²
OTHER	Shaft / Cavedio	SHFD	14,59 m²
OTHER	Shaft / Cavedio	SHFE	14,32 m²
OTHER	Shaft / Cavedio	SHFF	2,03 m²
OTHER	Shaft / Cavedio	SHFG	2,03 m²
OTHER	Shaft / Cavedio	SHFH	14,32 m²
OTHER	Shaft / Cavedio	SHFI	2,03 m²
OTHER	Shaft / Cavedio	SHFJ	14,32 m²
OTHER	Shaft / Cavedio	SHFK	3,34 m²
OTHER: 11			82,89 m²
SERVICE ROOMS			
Ground Floor 00-FFL			
SERVICE ROOMS	Janitorial / Locale pulizie	JAN01	8,52 m²
SERVICE ROOMS	Accessible toilet / Bagno disabili	RES01	4,63 m²
SERVICE ROOMS	Women's toilet / Servizi igienici donne	RES02	14,16 m²
SERVICE ROOMS	Men's toilet / Servizi igienici uomini	RES03	14,21 m²
SERVICE ROOMS	Unisex toilet / Bagno unisex	RES04	3,43 m²
SERVICE ROOMS	Accessible toilet / Bagno disabili	RES05	5,10 m²
SERVICE ROOMS	Vestibule / Disimpegno	VST01	2,58 m²
SERVICE ROOMS	Vestibule / Disimpegno	VST02	3,67 m²
First Floor 01-FFL			
SERVICE ROOMS	Changing room / Spogliatoio	CHG11	18,24 m²
SERVICE ROOMS	Changing room / Spogliatoio	CHG12	18,56 m²
SERVICE ROOMS	Janitorial / Locale pulizie	JAN11	5,96 m²
SERVICE ROOMS	Accessible toilet / Bagno disabili	RES11	4,63 m²
SERVICE ROOMS	Women's toilet / Servizi igienici donne	RES12	14,17 m²
SERVICE ROOMS	Men's toilet / Servizi igienici uomini	RES13	14,22 m²
SERVICE ROOMS: 14			132,07 m²
SHIPPING / RECEIVING			
Ground Floor 00-FFL			
SHIPPING / RECEIVING	Asset Management Office / Ufficio Asset Management	OFF01	9,84 m²
SHIPPING / RECEIVING	Loading-Unloading area / Locale Carico-Scarico	SHP01	122,56 m²
SHIPPING / RECEIVING	Staging-Receiving Area / Area Stoccaggio Temporaneo	STG01	64,74 m²
SHIPPING / RECEIVING: 3			197,14 m²
STORAGE (CUSTOMER)			
Ground Floor 00-FFL			
STORAGE (CUSTOMER)	Storage / Magazzino	STO02	61,61 m²
First Floor 01-FFL			
STORAGE (CUSTOMER)	Storage / Magazzino	STO11	53,57 m²
STORAGE (CUSTOMER)	Storage / Magazzino	STO12	49,27 m²
STORAGE (CUSTOMER)	Storage / Magazzino	STO13	143,39 m²
STORAGE (CUSTOMER): 4			307,84 m²
STORAGE (STACK)			
Ground Floor 00-FFL			
STORAGE (STACK)	Storage / Magazzino	STO01	41,07 m²
STORAGE (STACK): 1			41,07 m²

N

0 10 20 30 40 50m

LEGENDA / LEGEND

- BREAK ROOM
- CIRCULATION
- CONFERENCE
- CRITICAL SUPPORT
- DATA CENTER
- ENTRANCE
- EXTERNAL TECHNICAL AREA
- MMR/POE
- NON CRITICAL SUPPORT
- OFFICE (STACK)
- OTHER
- SERVICE ROOMS
- SHIPPING / RECEIVING
- STORAGE (STACK)
- STORAGE (CUSTOMER)

LEGENDA / LEGEND

- CIRCULATION
- EXTERNAL TECHNICAL AREA
- OFFICE (STACK)
- OFFICE (CUSTOMER)
- OTHER
- SERVICE ROOMS
- STORAGE (CUSTOMER)

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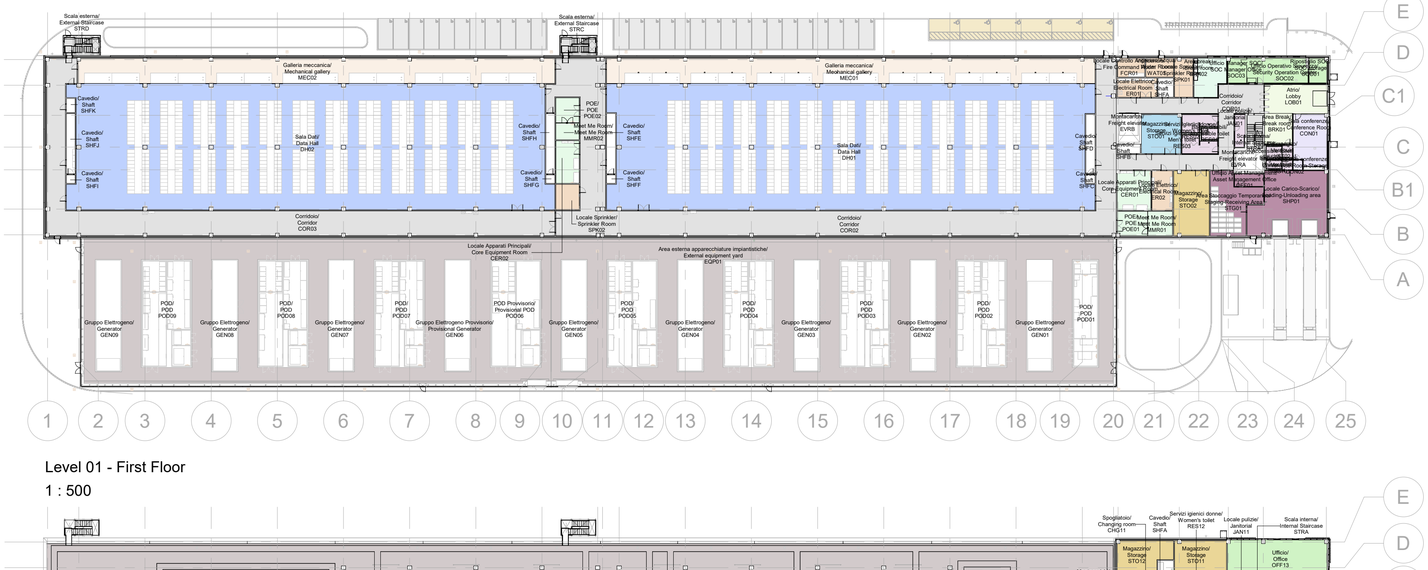
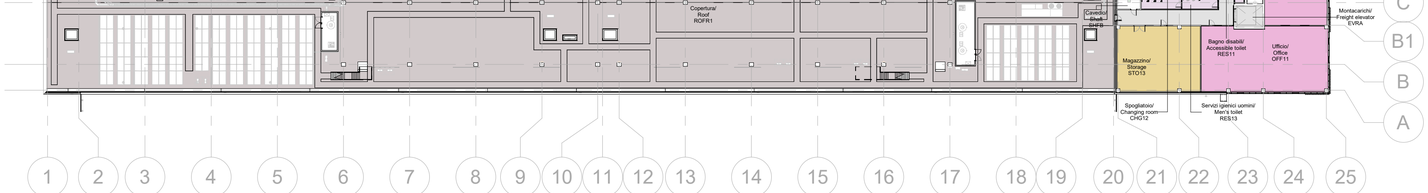
Level 00 - Ground Floor

1 : 500



Level 01 - First Floor

1 : 500



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CLIENT / COMMITTENTE:

STACK INFRASTRUCTURE

Project Name / Progetto:
STACK MIL07 Datacenter

Location / Indirizzo progetto:
Milan, Italy

BIM Client Consultant / Consulente BIM del Cliente
ARC:BIM
2nd Floor, 140 St John Street - London, GB

ARC:BIM

DESIGN TEAM / TEAM DI PROGETTO

CONSULTING DESIGNER / PROGETTISTA

ARCHITECTURAL DESIGN / PROGETTO ARCHITETTONICO
Arch. Daniele De Bettin
DBA S.p.A.
Viale Liguria 24, Milano (MI)

STRUCTURAL DESIGN / PROGETTO STRUTTURE
Ing. Diego Serafini
DBA S.p.A.
Viale G. G. Felissent 20D, Villorba (TV)

MECHANICAL DESIGN / PROGETTO IMP. MECCANICI ED ELETTRICI
Ing. Sacha Busetti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

ELECTRICAL DESIGN / PROGETTO IMP. ELETTRICI E SPECIALI
Ing. Sacha Busetti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

COORDINATION / COORDINAMENTO
PM - *Alessandro Masiero*
BIM Manager - *S. Di Biase*
BIM Coordinator - *R. Sodano*

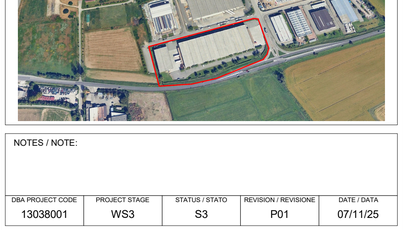
INTEGRATED DESIGN / PROGETTAZIONE COORDINATA:

DBA

DBA S.p.A.
Sede legale:
Piazza Roma, 19
32043 S. Stefano di Cadore (BL)
tel. +39.0422.693511
certificata **ISO 9001:2015**

Sede secondaria:
Viale Felissent, 20/D
31020 Villorba (TV)
tel. +39.0422.693511
RINA n.5923/01/S IQNet n.IT-19510

PROJECT CODE	ORIGINATOR	FUNCTIONAL	SPATIAL B.	FORM	DISCIPLINE	TYPE	NUMBER
MIL07	DBA	AZ	XX	SH	A	80	001



NOTES / NOTE:

DBA PROJECT CODE	PROJECT STAGE	STATUS / STATO	REVISION / REVISIONE	DATE / DATA
13038001	WS3	S3	P01	07/11/25

REV.	REVISION DESCRIPTION / DESCRIZIONE REVISIONE	REVISION DATE
P01	S4 – RIBA 3 Submittal	07/11/25

Client / Committente: STACK INFRASTRUCTURE

Oggetto:
Facility A

Programma funzionale
Subject:
Facility A

Space Planning

SIZE / FORMATO: A1 [594*841]
SCALE / SCALA: 1 : 500
DRAWN / REDATTO: D. Guananga
CHECKED / CONTROLLATO: V. Braconi
APPROVED / APPROVATO: D. De Bettin

FILE NAME / NOME FILE: MIL07-DBA-AZ-XX-SH-A-80001.P01

Project Number: MIL07-DBA
Project Origin: MIL07-DBA-AZ-ZZ-M3-A-000001

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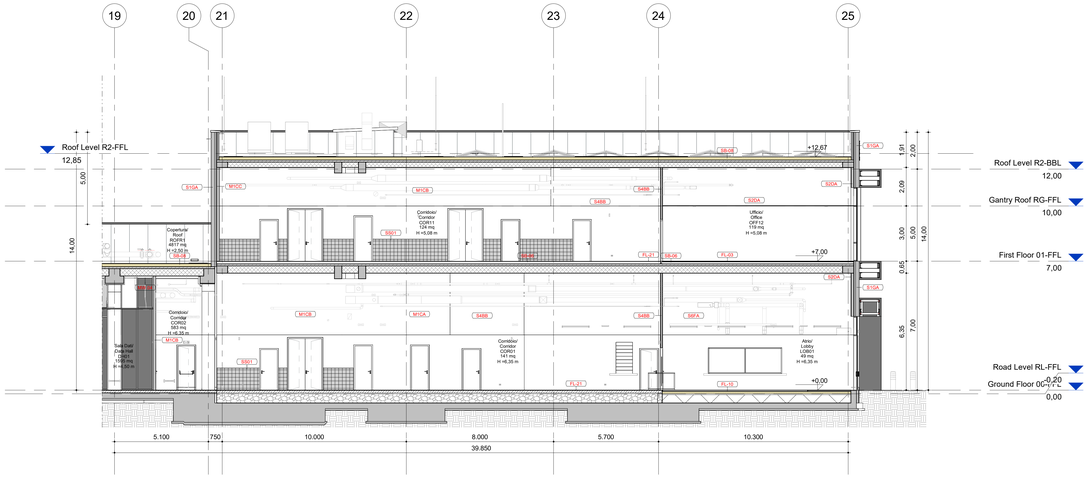
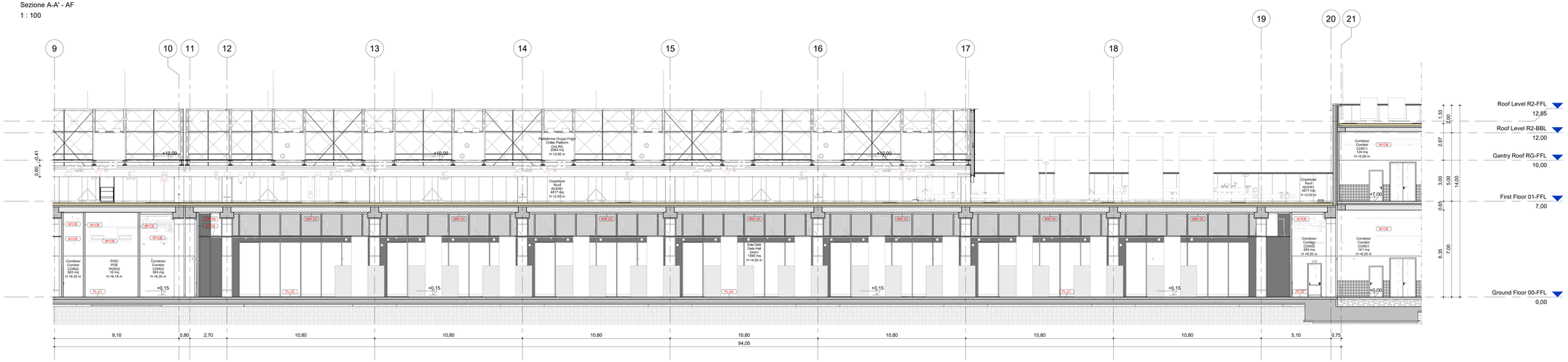
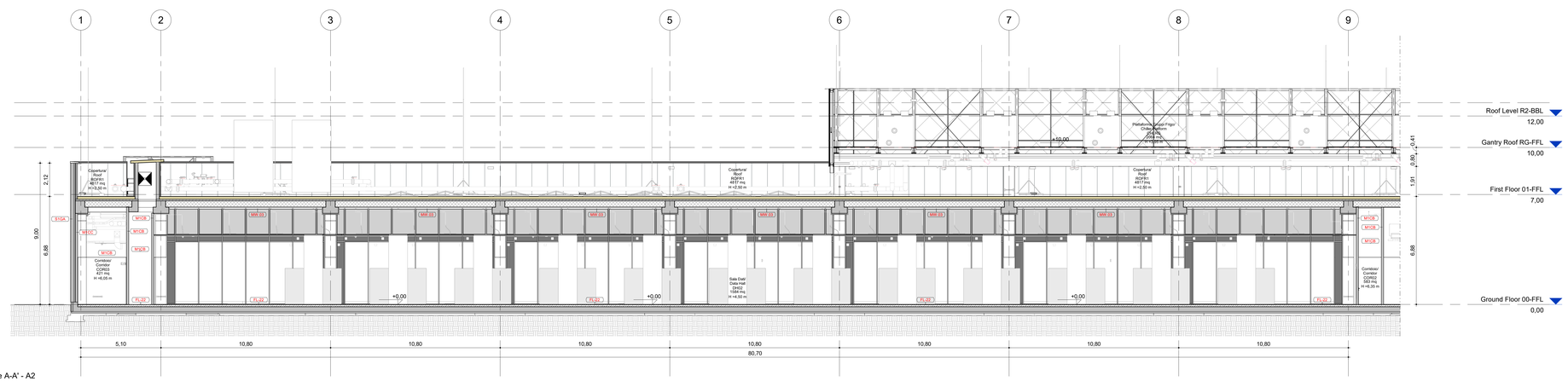


Sezione A-A' - AF
1 : 100



Sezione A-A' - A1
1 : 100



Sezione A-A' - A2
1 : 100

0 2 4 6 8 10m

LEGENDA / LEGEND

- Calcestruzzo prefabbricato / Precast concrete
- Calcestruzzo cellulare / Cellular concrete
- Isolamento con pannello sandwich / Sandwich panel insulation
- Parete in cartongesso con isolamento / *Gypsum board wall with insulation*
- Grigliato in rete metallica/ *Mesh metal grating*
- Pavimento in grigliato metallico zincato a caldo/ *Hot dipped galvanised steel grid floor*
- Ghiaia/ *Gravel*
- Pilastro in calcestruzzo prefabbricato / Precast concrete pillar

ETICHETTA LOCALE / ROOM TAG

Nome Locale ITA
Room Number ENG
Codice Locale / Room Code
Area / Area
(m²)

CODICE LOCALE / *ROOM CODE*

NUMERO PROGRESSIVO LOCALE (*) / *ROOM TYPE PROGRESSIVE NUMBER (*)*
1
2

(*) Exception for Risers/Elevators/Stairs - use letter instead of number (e.g. a, b, c, etc) and the room will be unique through the floors.

OFF N X

CODICE TIPOLOGIA LOCALE / *ROOM TYPE CODE*
SOC: CONTROLLO ACCESSI / *SECURITY ROOM*
STO: MAGAZZINO / *STORAGE*
WCE: WC/SPOGLIATOIO / *RESTROOM*
OFF: UFFICIO / *OFFICE*

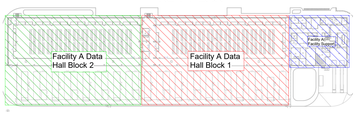
consultare il QQ per l'elenco completo / check BEP document for the full list

PIANO / *STOREY*
0: PIANO TERRA / *GROUND FLOOR*
1: PIANO PRIMO / *FIRST FLOOR*
RG: COPERTURA GANTRY / *ROOF GANTRY*
R1: COPERTURA DATA HALL / *DATA HALL ROOF*
RF: COPERTURA UFFICI / *OFFICE ROOF*
NA : LEVEL A

consultare il QQ per l'elenco completo / check BEP document for the full list

(*) Exception for Risers/Elevators/Stairs - Jersey reference is to be avoided since these rooms will be unique through the floors.

KEY PLAN



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CLIENT / COMMITTENTE:

STACK INFRASTRUCTURE

Project Name / Progetto:
STACK MIL07 Datacenter

Location / Indirizzo progetto:
Milan, Italy

BIM Client Consultant / Consulente BIM del Cliente
ARC:BIM
2nd Floor, 140 St John Street - London, GB

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CONSULTING DESIGNER / PROGETTISTA

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Ing. Sacha Busetti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

COORDINATION / COORDINAMENTO
PM - *Alessandro Maiaro*
BIM Manager - *E. Di Biase*
BIM Coordinator - *R. Sodano*

INTEGRATED DESIGN / PROGETTAZIONE COORDINATA:

DBA

DBA S.p.A.
Sede legale:
Piazza Alpini, 19
32040 S. Stefano di Cadore (BL)
P.IVA 01070390257
certificata ISO 9001:2015 Sede secondaria:
Viale Felissent, 20/D
31020 Vittorio (TV)
tel. 0438 1452000 - fax 0438 1452001
cert.Cciaa 1171-158212

PROJECT CODE	ORIGINATOR	FUNCTIONAL	SPATIAL B.	FORM	DISCIPLINE	TYPE	NUMBER
MIL07	DBA	AZ	ZZ	DR	A	20	100

NOTES / NOTE:

DBA PROJECT CODE	PROJECT STAGE	STATUS / STATO	REVISION / REVISIONE	DATE / DATA
13038001	WS3	S3	P01	07/11/25

REV.	REVISION DESCRIPTION - DESCRIZIONE REVISIONE	REVISION DATE
	Issued for Approval	07/11/25

Client / Committente: STACK INFRASTRUCTURE

Oggetto: Facility A

Sezioni
Subject: Facility A
Sections

SIZE / FORMATO: A0 +1 [841*1189]
SCALE / SCALA: As indicated
DRAWN / DISEGNATO: D. Guananga
CHECKED / CONTROLLATO: V. Braconi
APPROVED / APPROVATO: D. De Bellin

FILE NAME / NOME FILE: MIL07-DBA-AZ-ZZ-DR-A-20100.P01

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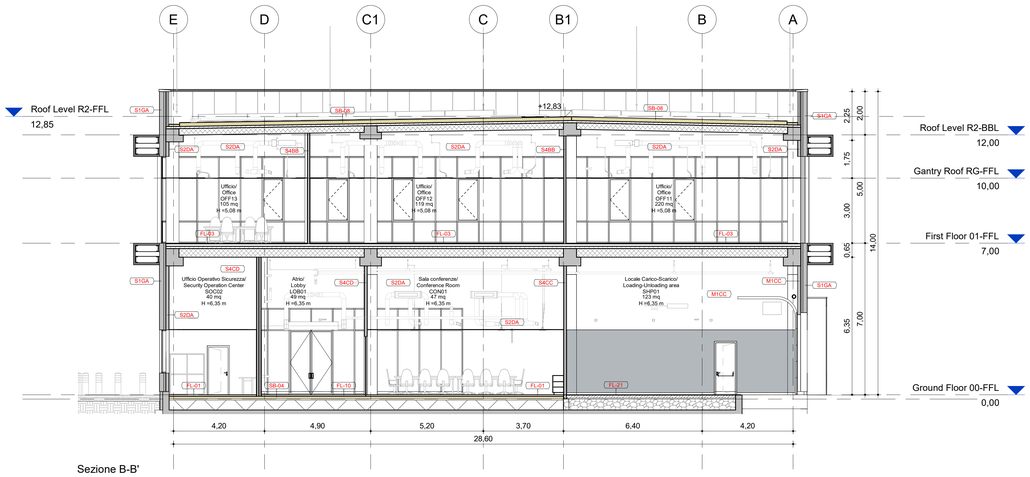
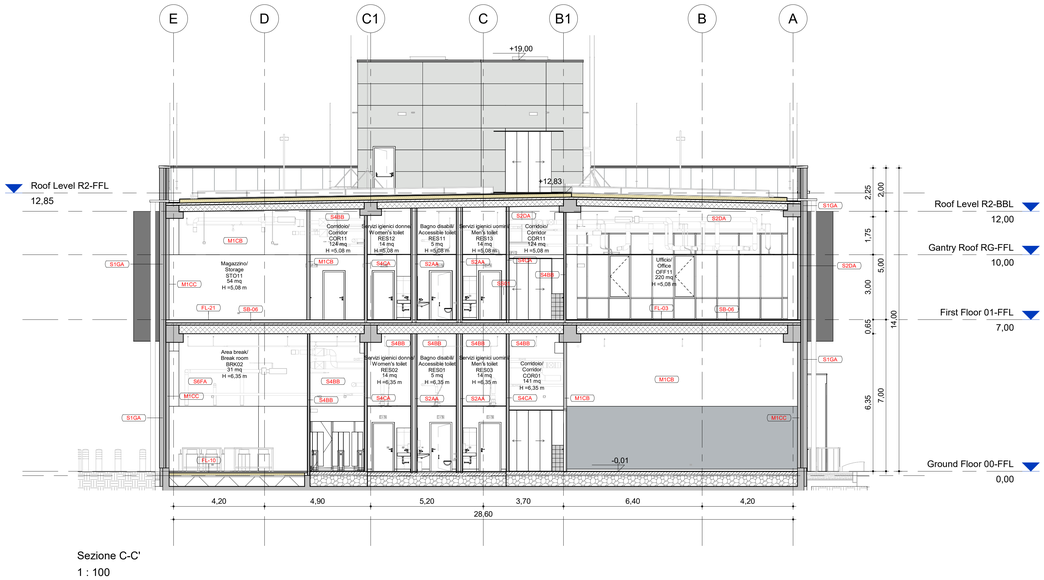
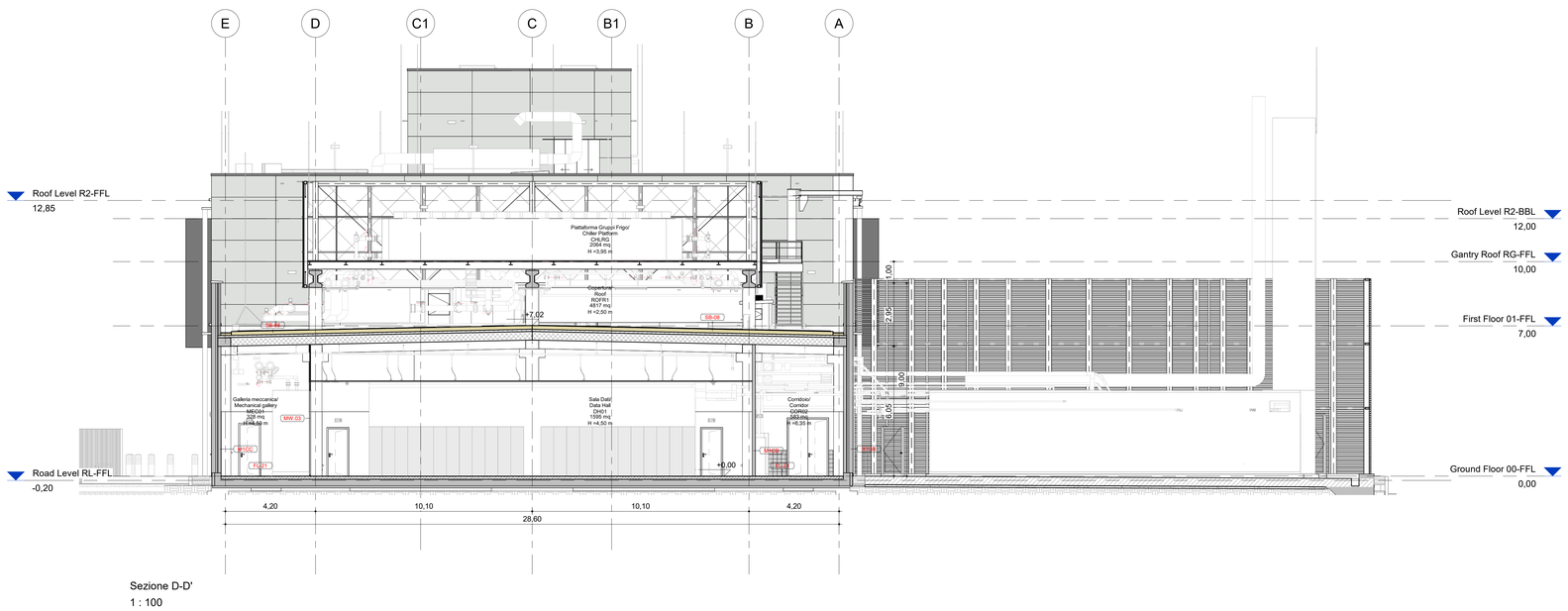


Sezione B-B'
1 : 100



Sezione C-C'
1 : 100



Sezione D-D'
1 : 100

0 2 4 6 8 10m

LEGENDA / LEGEND

- Calcestruzzo prefabbricato / Precast concrete
- Calcestruzzo cellulare / Cellular concrete
- Isolamento con pannello sandwich / Sandwich panel insulation
- Parete in cartongesso con isolamento / *Gypsum board wall with insulation*
- Grigliato in rete metallica/ *Mesh metal grating*
- Pavimento in grigliato metallico zincato a caldo/ *Hot dipped galvanised steel grid floor*
- Ghiaia/ *Gravel*
- Pilastro in calcestruzzo prefabbricato / Precast concrete pillar

ETICHETTA LOCALE / ROOM TAG

Nome Locale ITA
Room Number ENG
Codice Locale / Room Code
Area / Area
PP.[*]

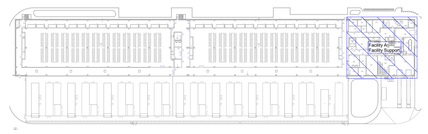
CODICE LOCALE / ROOM CODE

OFF N X

CODICE TIPOLOGIA LOCALE
ROOM TYPE CODE
SOC: SORVEGLIANZA / ACCESSI / *SECURITY ROOM*
STG: MAGAZZINO / STORAGE
VST: DISIMPEGNO / VESTIBULE
OFF: UFFICIO / OFFICE
...
consultare il *pGI per l'elenco completo / check BEP document for the full list*

NUMERO PROGRESSIVO LOCALE (*)
ROOM TYPE PROGRESSIVE NUMBER (*)
1
2
...
(*) Exception for Risers/Elevators/Stairs - use letter instead of number (e.g. A, B, C, etc) and the room will be unique through the floors.

PIANO
STOREY
0 : PIANO TERRA / *GROUND FLOOR*
1: PIANO PRIMO / *FIRST FLOOR*
RG: PIATTAFORMA COPERTURA / *ROOF GANTRY*
R1: COPERTURA DATA HALL / DATA HALL ROOF
RF: COPERTURA UFFICI / OFFICE ROOF
NN : LEVEL X
...
consultare il *pGI per l'elenco completo / check BEP document for the full list*
(*) Exception for Risers/Elevators/Stairs - storey reference to be avoided since these rooms will be unique through the floors.



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CLIENT / COMMITTENTE:

STACK INFRASTRUCTURE

Project Name / Progetto
STACK MIL07 Datacenter

Location / Indirizzo progetto
Milan, Italy

BIM Client Consultant / Consulente BIM del Cliente
ARC:BIM
2nd Floor, 140 St.John Street - London, GB

ARC:BIM

DESIGN TEAM / TEAM DI PROGETTO

CONSULTING DESIGNER / PROGETTISTA

ARCHITECTURAL DESIGN /
PROGETTO ARCHITETTONICO
Arch. Daniele De Bettin
DBA S.p.A.
Viale Liguria 24, Milano (MI)

STRUCTURAL DESIGN /
PROGETTO STRUTTURE
Ing. Diego Serafini
DBA S.p.A.
Viale G. G. Felissent 20D, Villorba (TV)

MECHANICAL DESIGN /
PROGETTO IMP. MECCANICI ED ELETTRICI
Ing. Sacha Busetti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

ELECTRICAL DESIGN /
PROGETTO IMP. ELETTRICI E SPECIALI
Ing. Sacha Busetti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

COORDINATION / COORDINAMENTO
PM - *Alessandro Masiero*
BIM Manager - *S. Di Biase*
BIM Coordinator - *R. Sodano*

INTEGRATED DESIGN / PROGETTAZIONE COORDINATA:

DBA

DBA S.p.A.
Sede legale:
Via Callalta, 1 ter
32040 S. Stefano di Cadore (BL)
tel. +39 0422 693511
certificata **ISO 9001:2015** RINA n.592/3/15 IQNet n.IT-10519

Sede secondaria:
Viale G. G. Felissent 20D
31020 Villorba (TV)
tel. +39 0422 693511

PROJECT CODE	ORIGINATOR	FUNCTIONAL	SPATIAL B.	FORM	DISCIPLINE	TYPE	NUMBER
MIL07	DBA	AZ	ZZ	DR	A	20	101

DBA PROJECT CODE	PROJECT STAGE	STATUS / STATO	REVISION / REVISIONE	DATE / DATA
13038001	WS3	S3	P01	07/11/25

REV.	REVISION DESCRIPTION / DESCRIZIONE REVISIONE	REVISION DATE
P01	S4 - RIBA 3 Submittal	07/11/25

Client / Committente
STACK INFRASTRUCTURE

Oggetto:
Facility A

Subject:
Facility A

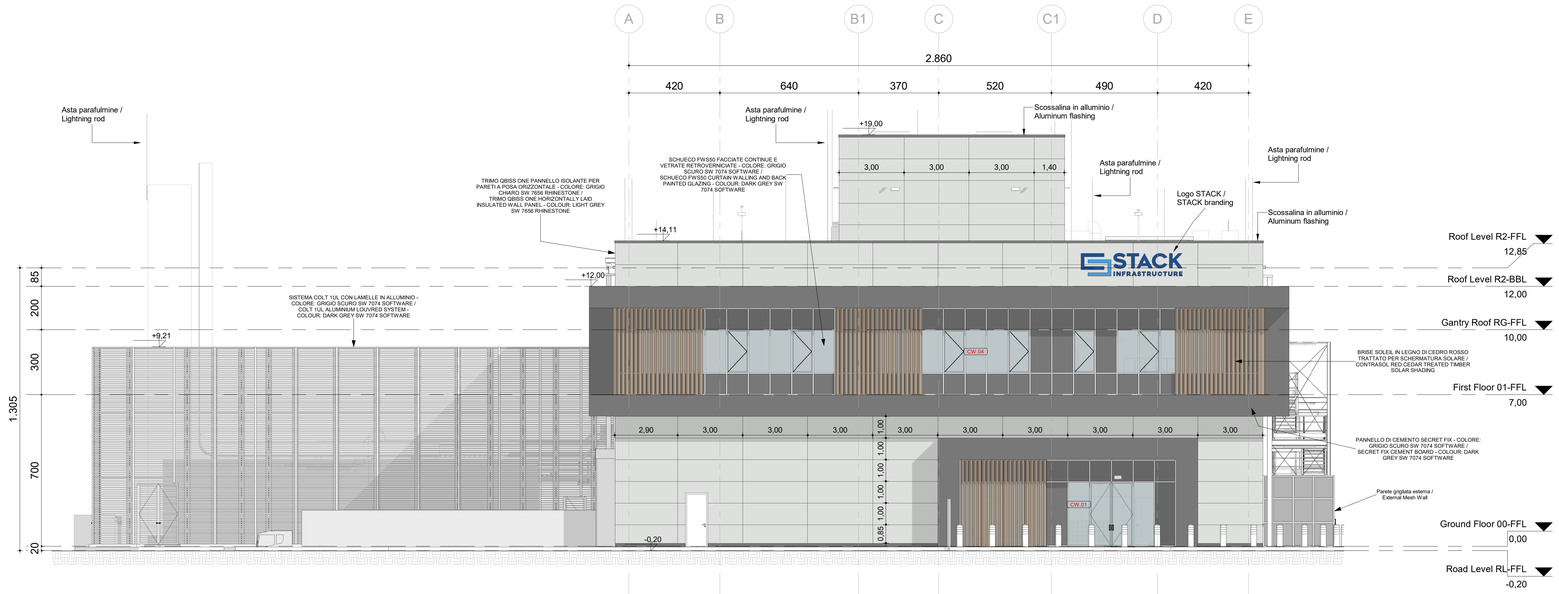
Sections

SIZE / FORMATO: A0 [841*1189]
SCALE / SCALA: As indicated
DRAWN / REDATTO: D. Guanangа
CHECKED / CONTROLLATO: V. Braconi
APPROVED / APPROVATO: D. De Bettin

FILE NAME / NOME FILE: MIL07-DBA-AZ-ZZ-DR-A-20101.P01

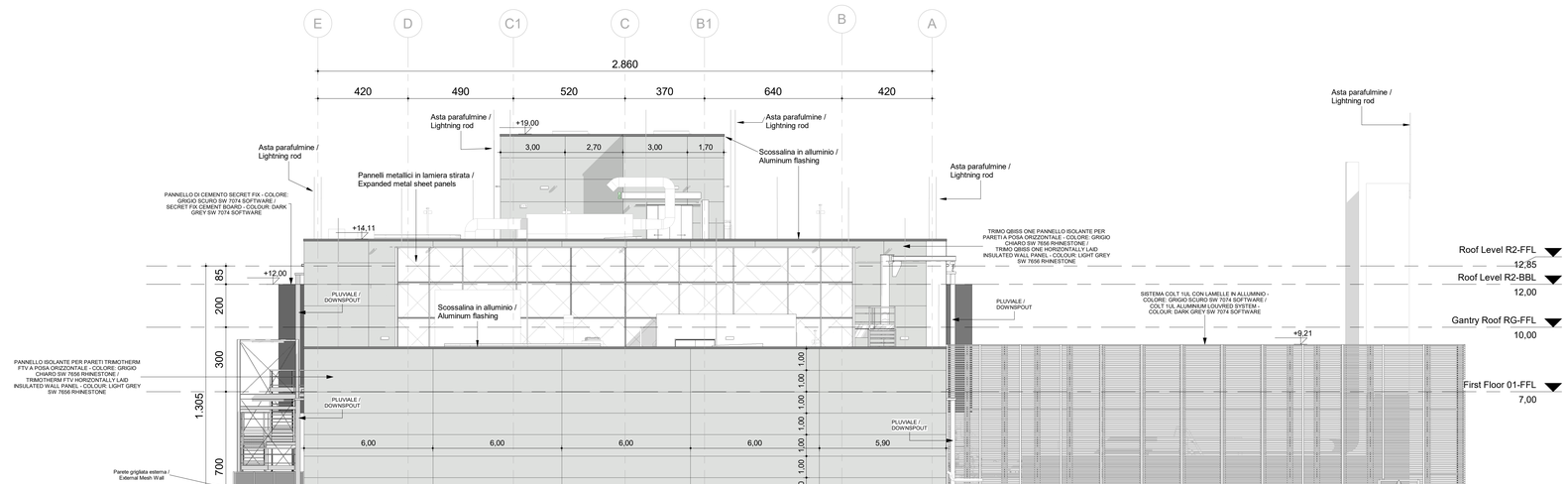
MIL07-DBA-AZ-ZZ-DR-A-20101.P01
Page 1/1

PROPERTY OF DBA S.p.A. NON UTILIZZABILE O RIPLICABILE (ANCHE IN PARTE) SENZA CONSENSO SCRITTO DA PARTE DI DBA.



Prospetto Est / East Elevation

1 : 100



Prospetto Ovest / West Elevation

1 : 100

0 2 4 6 8 10m

LEGENDA / LEGEND

	Vetro chiaro / Clear glass
	Grigliato metallico / Mesh metal grating
300x100mm	TRIMO QBISS ONE Pannello isolante per pareti a posa orizzontale – Colore: grigio chiaro SW 7656 RHINESTONE / TRIMO QBISS ONE Horizontally laid insulated wall panel – Colour: light grey SW 7656 RHINESTONE
600x100mm	Pannello isolante per pareti TRIMOTHERM FTV a posa orizzontale – Colore: grigio chiaro SW 7656 RHINESTONE / TRIMOTHERM FTV Horizontally laid insulated wall panel – Colour: light grey SW 7656 RHINESTONE
	Pannello di cemento SECRET FIX – Colore, Grigio scuro SW 7074 SOFTWARE / SECRET FIX Board – Colour: dark grey SW 7074 SOFTWARE
	Pannello di cemento SECRET FIX – Colore, Grigio scuro SW 7074 SOFTWARE / SECRET FIX Board – Colour: dark grey SW 7074 SOFTWARE
	STACK BRANDING - BLUES AS PER US BOD

Note / Notes

Pavimento finito = 0,000 mm = 92.40 m s.l.m. /
Finished floor level = 0.000 mm = 92.40 m above s.l.

Tutte le misure sono indicate in millimetri (mm), salvo diversa indicazione. /
All measurements are indicated in millimeter (mm) unless indicated otherwise.

Le dilatazioni delle pareti in blocchi di calcio silicato e di quelle in blocchi di calcestruzzo cellulare sono da confermare con il fornitore/produttore. /
Calcium silicate block walls and cellular concrete block walls dilatations t.b.c. with supplier.

Le dimensioni delle aperture delle porte riportate tra parentesi indicano le larghezze libere delle aperture, le luci libere dei fori sulle pareti sono indicate fuori dalle parentesi e devono essere verificate con il fornitore individuato prima della definizione delle aperture sui setti in c.a. (che siano gettati in opera o prefabbricati). /
Indicated dimensions for doorframe openings in the bracket are clear openings of the doorframes, clear dimensions of the wall opening are defined without bracket and they should be verified with the choosen supplier before the definition of the openings in the concrete reinforced walls (in both cases, prefabbricated or cast-in-situ).

Tutte le dimensioni devono essere controllate prima dell'inizio della costruzione. /
All dimensions must be checked before construction begins.

Il presente elaborato è valido solo in coordinamento con tutte le altre discipline specialistiche con le quali deve essere verificata la conformità. Tutte le misure ed eventuali variazioni rispetto al presente elaborato devono essere verificate in cantiere.
This plan only valid in connection & coordination with the plans of all other Specialist disciplines, and must be checked for conformity with these plans. Deviations in dimensions must be clarified with the site management.

CLIENT / COMMITTENTE:

STACK INFRASTRUCTURE

Project Name / Progetto:
STACK MIL07 Datacenter

Location / Indirizzo progetto:
Milan, Italy

BIM Client Consultant / Consulente BIM del Cliente
ARC:BIM
2nd Floor, 140 St John Street - London, GB

ARC:BIM

DESIGN TEAM / TEAM DI PROGETTO

CONSULTING DESIGNER / PROGETTISTA

ARCHITECTURAL DESIGN /
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Arch. Daniele De Bettin
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Via Natale Battaglia 10, Milano (MI)

COORDINATION / COORDINAMENTO
PM - *Alessandro Masiero*
BIM Manager - *S. Di Biase*
BIM Coordinator - *R. Sodano*

INTEGRATED DESIGN / PROGETTAZIONE COORDINATA:

DBA

DBA S.p.A.
Sede legale: Piazza Roma, 19 32043 S. Stefano di Cadore (BL)
Sede secondaria: Viale Felissent, 20/D 31020 Villorba (TV)
Capitale sociale € 100.000 i.v. certificata **ISO 9001:2015** RINA n. 592310-S Qshas n.IT-10010

PROJECT CODE	ORIGINATOR	FUNCTIONAL	SPATIAL B.	FORM	DISCIPLINE	TYPE	NUMBER
MIL07	DBA	AZ	ZZ	DR	A	20	102

NOTES / NOTE:

DBA PROJECT CODE	PROJECT STAGE	STATUS / STATO	REVISION / REVISIONE	DATE / DATA
13038001	WS3	S3	P01	07/11/25

REV.	REVISION DESCRIPTION / DESCRIZIONE REVISIONE	REVISION DATE
P01	S4 – RIBA 3 Submittal	07/11/25

Client / Committente: STACK INFRASTRUCTURE

Oggetto:
Facility A

Prospetti
Subject:
Facility A

Elevations

SIZE / FORMATO: A0 (841*1189)
SCALE / SCALA: 1 : 100
DRAWN / REDATTO: D. Guanangа
CHECKED / CONTROLLATO: V. Braconi
APPROVED / APPROVATO: D. De Bettin

FILE NAME / NOME FILE: MIL07-DBA-AZ-ZZ-DR-A-20102.P01

MIL07-DBA-AZ-ZZ-DR-A-20102.P01

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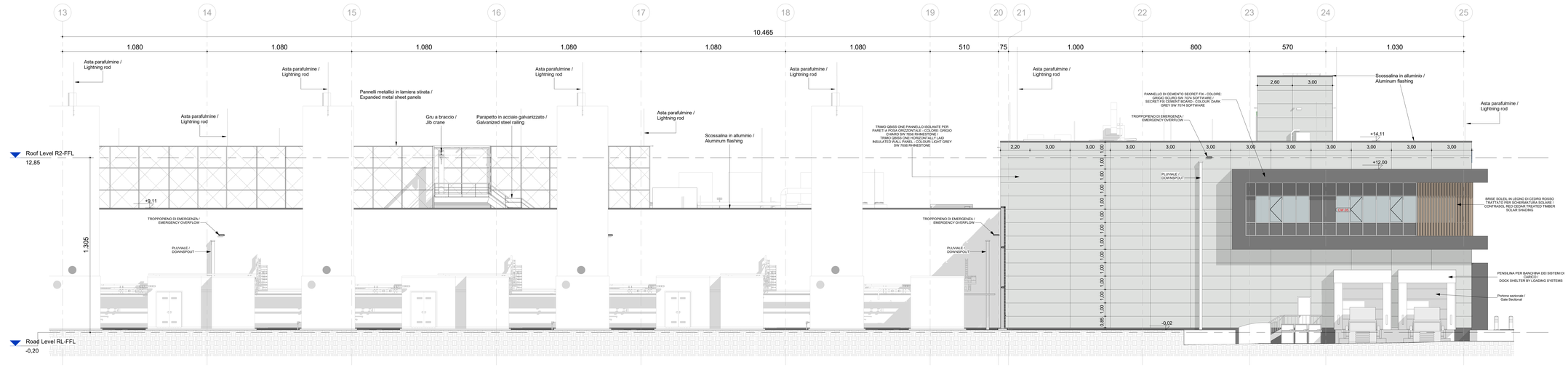
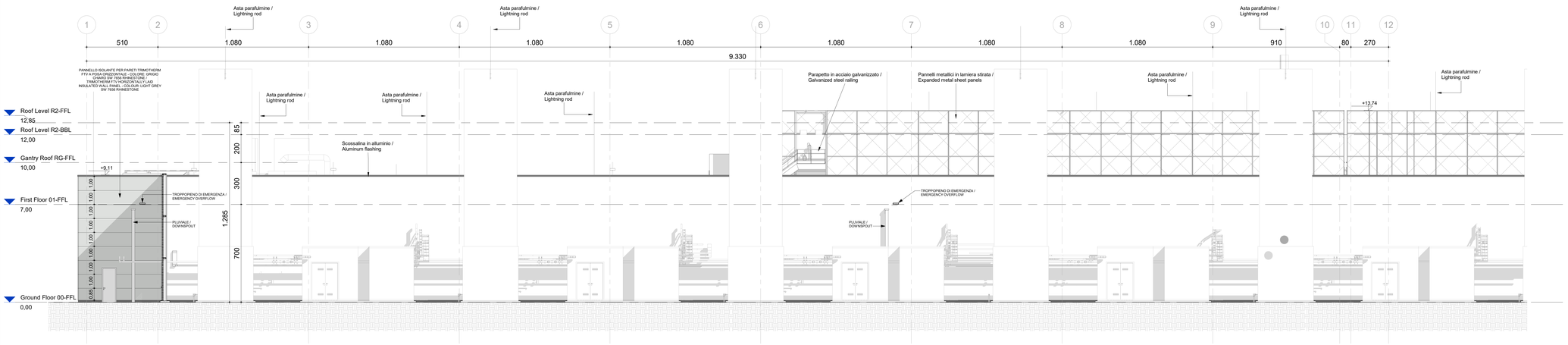


Prospetto Nord / North Elevation - 00

1 : 100



Prospetto Nord / North Elevation - 01

1 : 100

0 2 4 6 8 10m

LEGENDA / LEGEND

	Vetro chiaro / Clear glass
	Grigliato metallico / Mesh metal grating
300x100mm	TRIMO QBISS ONE Pannello isolante per pareti a posa orizzontale – Colore: grigio chiaro SW 7656 RHINESTONE / TRIMO QBISS ONE Horizontally laid insulated wall panel – Colour: light grey SW 7656 RHINESTONE
600x100mm	Pannello isolante per pareti TRIMOTHERM FTV a posa orizzontale – Colore: grigio chiaro SW 7656 RHINESTONE / TRIMOTHERM FTV Horizontally laid insulated wall panel – Colour: light grey SW 7656 RHINESTONE
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	STACK BRANDING - BLUES AS PER US BOD

Note / Notes

Pavimento finito = 0,000 mm = 92.40 m s.l.m. /
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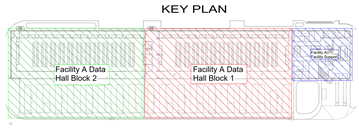
KEY PLAN



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CLIENT / COMMITTENTE:

STACK INFRASTRUCTURE

Project name / Progetto:
STACK MIL07 Datacenter

Location / Indirizzo progetto:
Milan, Italy

BIM Client Consultant / Consulente BIM del Cliente
ARC:BIM
2nd Floor, 140 St John Street - London, GB

DESIGN TEAM / TEAM DI PROGETTO

CONSULTING DESIGNER / PROGETTISTA

ARCHITECTURAL DESIGN /
PROGETTO ARCHITETTONICO
Arch. Daniele De Bettin
DBA S.p.A.
Viale Liguria 24, Milano (MI)

STRUCTURAL DESIGN /
PROGETTO STRUTTURE
Ing. Diego Serafini
DBA S.p.A.
Viale G. G. Felissent 20D, Villorba (TV)

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PROGETTO IMP: MECCANICI ED ELETTRICI
Ing. Sacha Buselli
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

ELECTRICAL DESIGN /
PROGETTO IMP: ELETTRICI E SPECIALI
Ing. Sacha Buselli
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

COORDINATION / COORDINAMENTO
PM - *Alessandro Masiero*
BIM Manager - *S. Di Biase*
BIM Coordinator - *R. Sodano*

INTEGRATED DESIGN / PROGETTAZIONE COORDINATA:

DBA

DBA S.p.A.
Sede legale:
Piazza Maria, 19
32043 S. Stefano di Cadore (BL)
Sede secondaria:
Viale Felissent, 20/D
31020 Villorba (TV)
Capitale sociale: 100.000 i.v.
certificata **ISO 9001:2015** RINA: n.9220151013-QM-IT-11981/S
C.F./P.IVA: 01070150255 Cciaa n.17-198410

PROJECT CODE	ORIGINATOR	FUNCTIONAL	SPATIAL B.	FORM	DISCIPLINE	TYPE	NUMBER
MIL07	DBA	AZ	ZZ	DR	A	20	103

NOTES / NOTE:

DBA PROJECT CODE	PROJECT STAGE	STATUS / STATO	REVISION / REVISIONE	DATE / DATA
13038001	WS3	S3	P01	07/11/25

REV.	REVISION DESCRIPTION / DESCRIZIONE REVISIONE	REVISION DATE

BCC - SA – BIBA 3 Subsidiar

Client / Committente: STACK INFRASTRUCTURE

Oggetto:
Facility A

Prospetti

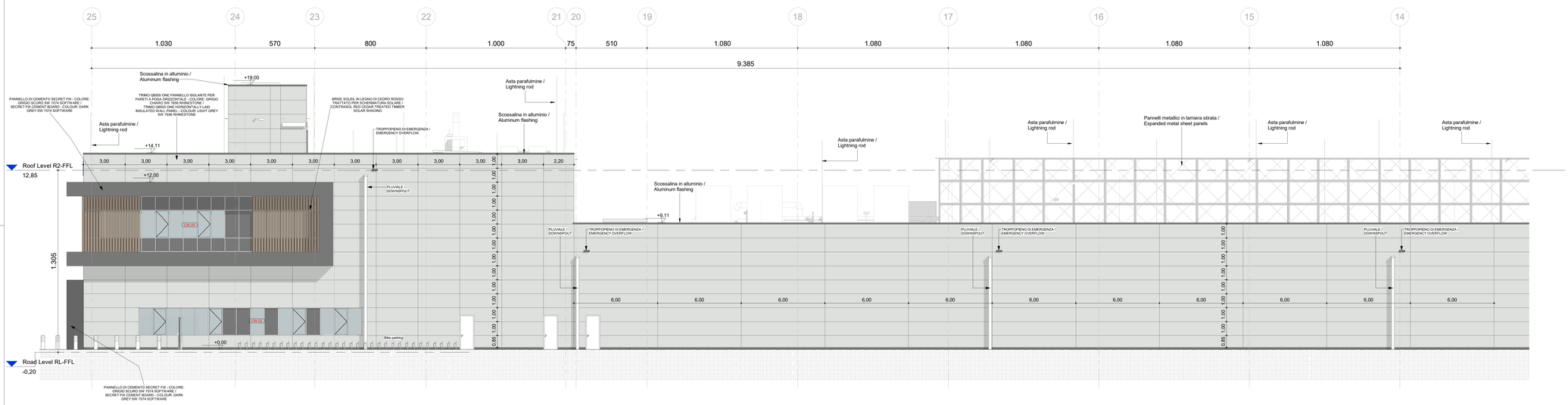
Subject:
Facility A

Elevations

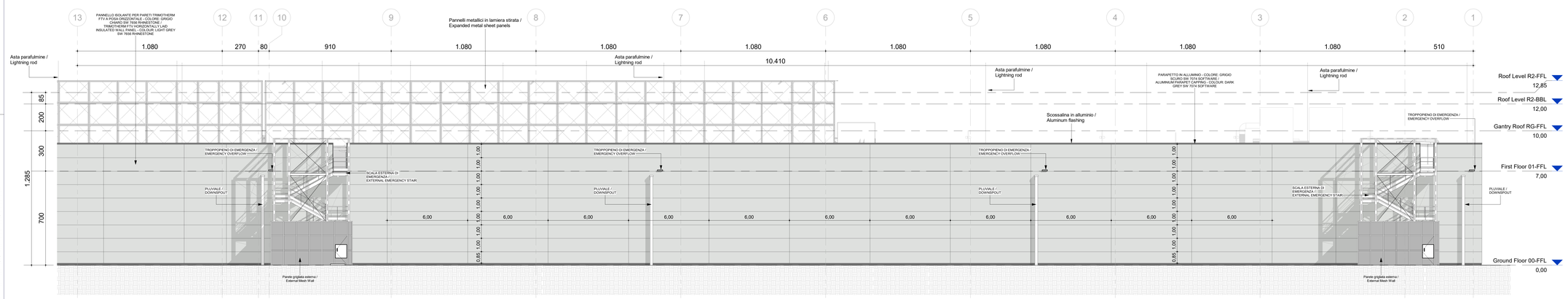
SIZE / FORMATO: A0 +1 (841*1189)
SCALE / SCALA: 1 : 100
DRAWN / REDATTO: D. Guanarga
CHECKED / CONTROLLATO: V. Braconi
APPROVED / APPROVATO: D. De Bettin

FILE NAME / NOME FILE: MIL07-DBA-AZ-ZZ-DR-A-20103.P01

PROPERTY OF DBA S.p.A. NON UTILIZZABILE O REPLICABILE ANCHE IN PARTO SENZA CONSENSO SCRITTO DA PARTE DI DBA.



Prospetto Sud / South Elevation - 01
1 : 100



Prospetto Sud / South Elevation - 00
1 : 100

0 2 4 6 8 10m

LEGENDA / LEGEND

	Vetro chiaro / Clear glass
	Grigliato metallico / Mesh metal grating
300x100mm	TRIMO QBISS ONE Pannello isolante per pareti a posa orizzontale – Colore: grigio chiaro SW 7656 RHINESTONE / TRIMO QBISS ONE Horizontally laid insulated wall panel – Colour: light grey SW 7656 RHINESTONE
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	Pannello di cemento SECRET FIX – Colore. Grigio scuro SW 7074 SOFTWARE / SECRET FIX Board – Colour: dark grey SW 7074 SOFTWARE
	Pannello di cemento SECRET FIX – Colore. Grigio scuro SW 7074 SOFTWARE / SECRET FIX Board – Colour: dark grey SW 7074 SOFTWARE
	STACK BRANDING - BLUES AS PER US BOD

Note / Notes

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Finished floor level = 0,000 mm = 92.40 m above s.l.

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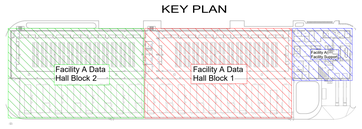
KEY PLAN



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CLIENT / COMMITTENTE:

STACK INFRASTRUCTURE

Project title / Progetto:
STACK MIL07 Datacenter

Location / Indirizzo progetto:
Milan, Italy

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COORDINATION / COORDINAMENTO
PM - *Alessandro Masiero*
BIM Manager - *S. Di Biase*
BIM Coordinator - *R. Sodano*

INTEGRATED DESIGN / PROGETTAZIONE COORDINATA

DBA

DBA S.p.A.
Sede legale
Piazza Maria, 19
32043 S. Stefano di Cadore (BL)
Sede secondaria
Viale Felissent, 20/D
31020 Vittorilla (TV)
Società di ingegneria certificata ISO 9001:2015 RINA n.IQ0220120 Cl.Ener n.IT-1061/0

PROJECT CODE	ORIGINATOR	FUNCTIONAL	SPATIAL B.	FORM	DISCIPLINE	TYPE	NUMBER
MIL07	DBA	AZ	ZZ	DR	A	20	104

NOTES / NOTE:

DBA PROJECT CODE	PROJECT STAGE	STATUS / STATO	REVISION / REVISIONE	DATE / DATA
13038001	WS3	S3	P01	07/11/25

REV.	REVISION DESCRIPTION / DESCRIZIONE REVISIONE	REVISION DATE

BCC - SA – BIBA 3 Subsidiar | STATUS

Client / Committente: STACK INFRASTRUCTURE

Oggetto:
Facility A

Prospetti

Subject:
Facility A

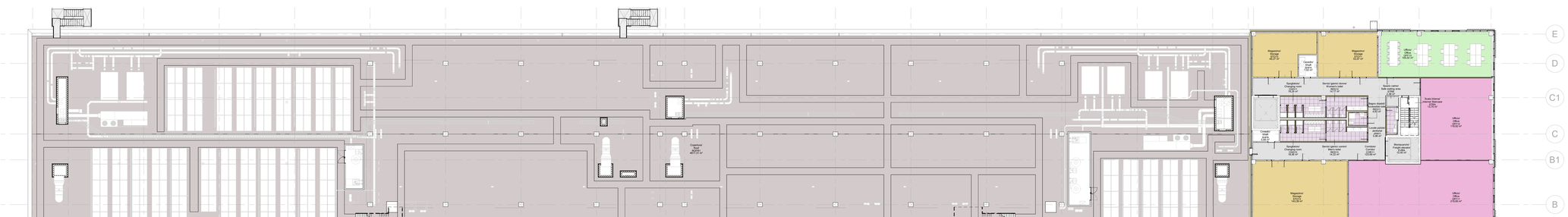
Elevations

SIZE / FORMATO: A0 +1 (841*1189)
SCALE / SCALA: 1 : 100
DRAWN / REDATTO: D. Guananga
CHECKED / CONTROLLATO: V. Braconi
APPROVED / APPROVATO: D. De Bettin

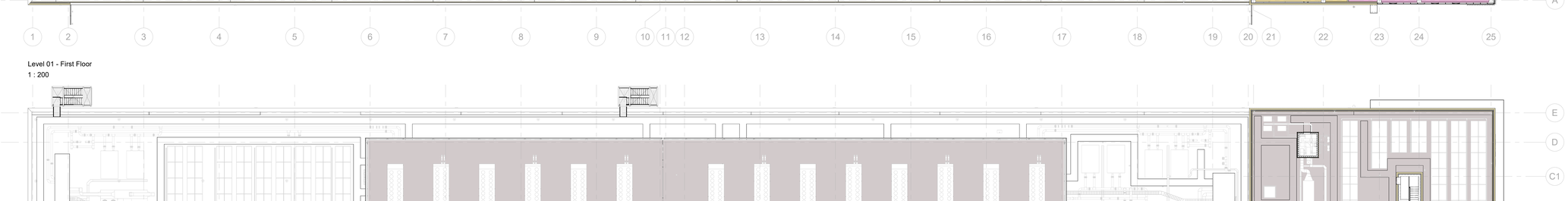
FILE NAME / NOME FILE: MIL07-DBA-AZ-ZZ-DR-A-20104.P01

PROPERTY OF DBA S.p.A. NON UTILIZZABILE O REPLICABILE ANCHE IN PARTE SENZA CONSENSO SCRITTO DA PARTE DI DBA.

Level 00 - Ground Floor
1 : 200



Level 01 - First Floor
1 : 200



0 4 8 12 16 20m

LEGENDA / LEGEND

- BREAK ROOM
- CIRCULATION
- CONFERENCE
- CRITICAL SUPPORT
- DATA CENTER
- ENTRANCE
- EXTERNAL TECHNICAL AREA
- MMR/POE
- NON CRITICAL SUPPORT
- OFFICE (STACK)
- OTHER
- SERVICE ROOMS
- SHIPPING / RECEIVING
- STORAGE (STACK)
- STORAGE (CUSTOMER)

LEGENDA / LEGEND

- CIRCULATION
- EXTERNAL TECHNICAL AREA
- OFFICE (STACK)
- OFFICE (CUSTOMER)
- OTHER
- SERVICE ROOMS
- STORAGE (CUSTOMER)

ETICHETTA LOCALE / ROOM TAG

Nome Locale ITA
Room Number ENG
Codice Locale / Room Code
Area / Area per

CODICE LOCALE / ROOM CODE

NUMERO PROGRESSIVO LOCALE (*)
ROOM TYPE PROGRESSIVE NUMBER (*)
X
X

(*) Eccezioni for Rack/Elevatore/Stairs - use letter instead of number (e.g. A, B, C, etc) and the rooms will be unique through the Stairs

OFF N X

CODICE TIPOLOGIA LOCALE
ROOM TYPE CODE
RCS: CENTRO CICLO ACCESSI / *SECURITY ROOM*
STO: MAGAZZINO / *STORAGE*
VST: DISIMPEGNO / *VESTIBULE*
OFF: UFFICIO / *OFFICE*

consultare il pCI per l'elenco completo /
check BEP document for the full list

PIANO
STOREY
0: PIANO TERRA / *GROUND FLOOR*
1: PIANO PRIMO / *FIRST FLOOR*
RG: PIATTAFORMA COPERTURA / *ROOF GANTRY*
R1: COPERTURA DATA HALL / *DATA HALL ROOF*
RF: COPERTURA UFFICI / *OFFICE ROOF*
SN: LEVEL X

consultare il pCI per l'elenco completo /
check BEP document for the full list

(*) Eccezioni for Rack/Elevatore/Stairs - avoid, only relevant to be avoided since those locks will be unique through the Stairs

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CLIENT / COMMITTENTE:

STACK INFRASTRUCTURE

Project Name /Progetto
STACK MIL07 Datacenter

Location / Indirizzo progetto
Milan, Italy

BIM Client Consultant / Consulente BIM del Cliente
ARC:BIM
2nd Floor, 140 St John Street - London, GB

DESIGN TEAM / TEAM DI PROGETTO

CONSULTING DESIGNER / PROGETTISTA

ARCHITECTURAL DESIGN /
PROGETTO ARCHITETTONICO
Arch. Daniele De Bettin
DBA S.p.A.
Viale Liguria 24, Milano (MI)

STRUCTURAL DESIGN /
PROGETTO STRUTTURE
Ing. Diego Serafini
DBA S.p.A.
Viale G. G. Felissent 20D, Vittorio (TV)

MECHANICAL DESIGN /
PROGETTO IMP. MECCANICI ED ELETTRICI
Ing. Sacha Busetti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

ELECTRICAL DESIGN /
PROGETTO IMP. ELETTRICI E SPECIALI
Ing. Sacha Busetti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

COORDINATION / COORDINAMENTO
PM - *Alessandro Maiorani*
BIM Manager - *S. Di Biase*
BIM Coordinator - *R. Sodano*

INTEGRATED DESIGN / PROGETTAZIONE COORDINATA:

DBA

DBA S.p.A.
Sede legale
Piazza Roma, 19
31011 Asolo (TV) Italia
tel. +39.0423.952111
certificata ISO 9001:2015 RINA n.IQ9215-7Q Rev.3 n.IT-10610

Sede secondaria
Viale Felissent, 20/D
31020 Vittorio Veneto (TV)
tel. +39.0422.405511
e-mail info@dba.it

PROJECT CODE	ORIGINATOR	FUNCTIONAL	SPATIAL B.	FORM	DISCIPLINE	TYPE	NUMBER
MIL07	DBA	AZ	ZZ	DR	A	80	001

NOTES / NOTE:

DBA PROJECT CODE	PROJECT STAGE	STATUS / STATO	REVISION / REVISIONE	DATE / DATA
13038001	WS3	S3	P01	07/11/25

REV.	REVISION DESCRIPTION / DESCRIZIONE REVISIONE	REVISION DATE
P01	S4 – BIBA 3 Submittal	2011/25

Client / Committente: STACK INFRASTRUCTURE

Oggetto:
Facility A

Programma funzionale

Subject:
Facility A

Space Planning

SIZE / FORMATO: A0 =1 (841*1189)
Scale / Scala: As indicated
DRAWN BY / DISEGNATO: D. Guarnanga
CHECKED / CONTROLLATO: V. Brazioni
APPROVED / APPROVATO: D. De Bettin

FILE NAME / NOME FILE: MIL07-DBA-AZ-ZZ-DR-A-80001.P01

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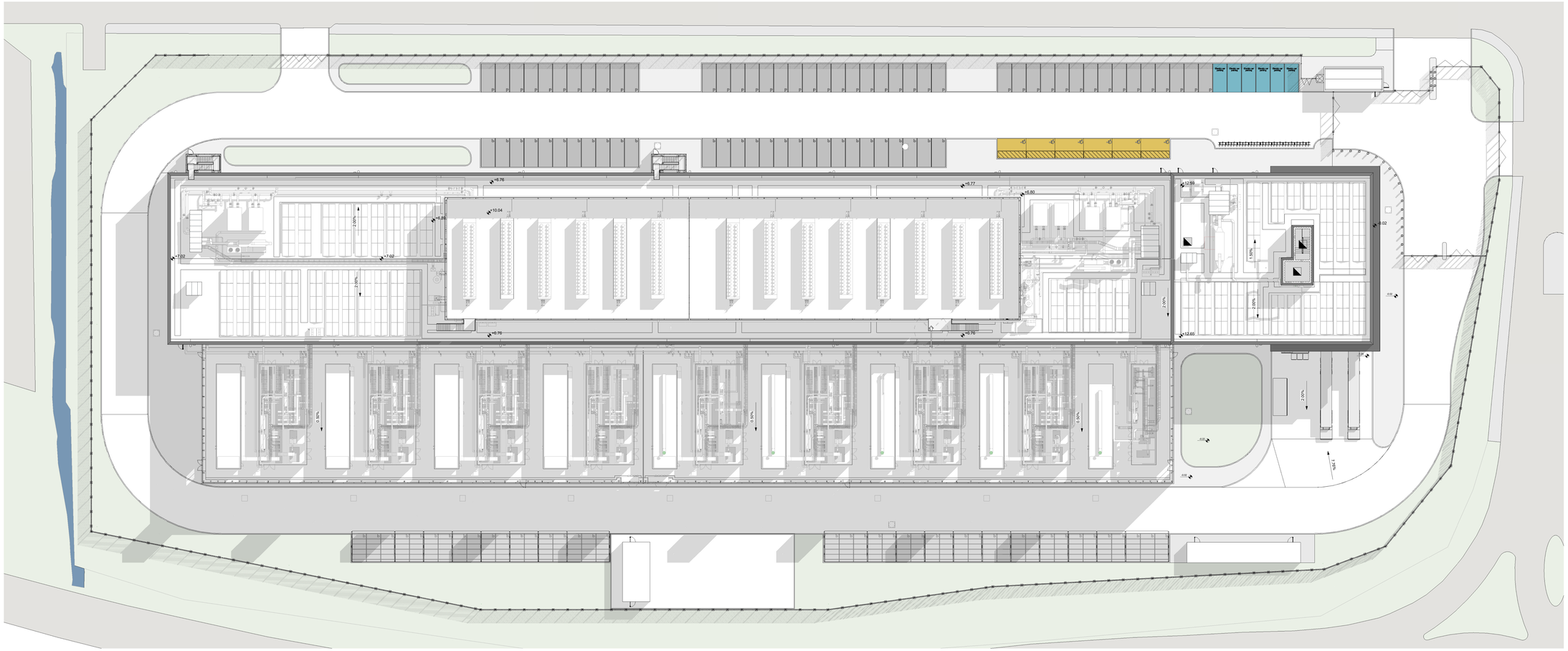
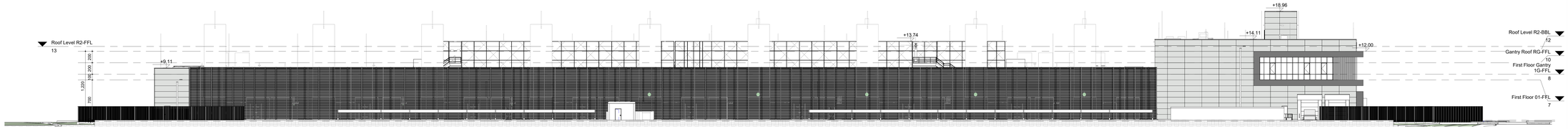


Site Plan - General Overview
1 : 200



Prospetto Nord / North Elevation
1 : 200

LEGEND

- Green area
- Roads
- Fence
- Parking
- Electric car pot
- Disable parking
- Photovoltaic panel

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CLIENT / COMMITTENTE:

STACK INFRASTRUCTURE

STACK MIL07 Datacenter

Via Lombardia, 27010 Siziano PV

BIM Project Coordinator, Consulente BIM del Cliente
ARC:BIM
2nd Floor, 140 St John Street - London, GB

ARC:BIM

DESIGN TEAM / TEAM DI PROGETTO

CONSULTING DESIGNER / PROGETTISTA

ARCHITECTURAL DESIGN /
PROGETTO ARCHITETTONICO
Arch. Daniele De Bettin
DBA S.p.A.
Viale Liguria 24, Milano (MI)

STRUCTURAL DESIGN /
PROGETTO STRUTTURE
Ing. Diego Serafini
DBA S.p.A.
Viale G. G. Felissent 20D, Vittoria (TV)

MECHANICAL DESIGN /
PROGETTO IMP. MECCANICI ED ELETTRICI
Ing. Sandro Buselli
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

ELECTRICAL DESIGN /
PROGETTO IMP. ELETTRICI E SPECIALI
Ing. Sandro Buselli
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

COORDINATION / COORDINAMENTO
PM - Alessandro Masaro
BIM Manager - S. Di Biase
BIM Coordinator - R. Solano

INTEGRATED DESIGN / PROGETTAZIONE COORDINATA

DBA

Sede secondaria
Via Cadorna 48
50100 Firenze (FI)
P. IVA / C.F. 04627890967
certificata ISO 9001:2015 RINA n.IQ0220155 Edition n.11 11/2019

PROJECT CODE	ORIGINATOR	FUNCTIONAL	SPACIAL B.	FORM	DISCIPLINE	TYPE	NUMBER
MIL07	DBA	EX	RL	DR	A	10	001

NOTES / NOTE:

DBA PROJECT CODE	PROJECT STAGE	STATUS / STATO	REVISION / REVISIONE	DATE / DATA
13038001	WS3	S4	P01	07/11/25

REV.	IM - TRA 3 Submittal	20/11/25
REV.	REVISION DESCRIPTION / DESCRIZIONE REVISIONE	REVISION DATE

Client / Committente: STACK INFRASTRUCTURE

Oggetto:
Esterni

Masterplan
Subject:
External

Site Plan

AD +2 (841*594)
SCALE / SCALA: 1:200
DRAWN BY / DISEGNATO DA: V. Braconi
CHECKED BY / CONTROLLATO DA: D. Spadazzi
APPROVED BY / APPROVATO DA: D. De Bettin

FILE NAME / NOME FILE: MIL07-DBA-EX-RL-DR-A-10001-P01.2

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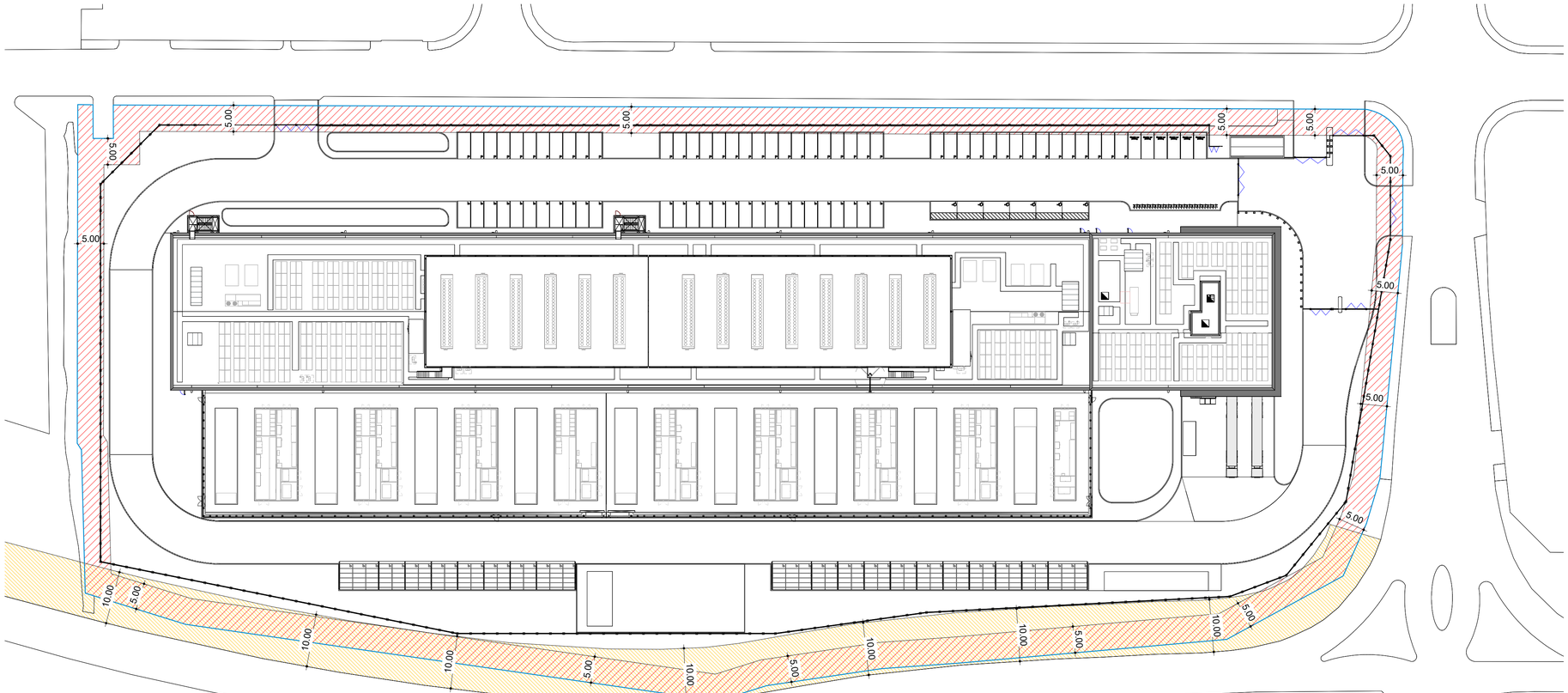

Site Plan - Setback and constraints

1 : 500

0 10 20 30 40 50m

Legenda / Legend

- Property Boundary (5 m)
  NO construction allowed
  YES boundary fence allowed
- Buffer zone from Strada Provinciale SP40 (10 m)
  NO construction allowed
  NO boundary fence allowed
- Property Boundary

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CLIENT / COMMITTENTE:

STACK INFRASTRUCTURE

Project Name / Progetto:
STACK MIL07 Datacenter

Location / Indirizzo progetto:
Via Lombardia, 27010 Siziano PV

BIM Client Consultant / Consulente BIM del Cliente
ARC:BIM
2nd Floor, 140 St John Street - London, GB

DESIGN TEAM / TEAM DI PROGETTO

CONSULTING DESIGNER / PROGETTISTA

ARCHITECTURAL DESIGN /
PROGETTO ARCHITETTONICO
Arch. Daniele De Bettin
DBA S.p.A.
Viale Liguria 24, Milano (MI)

STRUCTURAL DESIGN /
PROGETTO STRUTTURE
Ing. Diego Serafini
DBA S.p.A.
Viale G. G. Felissent 20D, Villorba (TV)

MECHANICAL DESIGN /
PROGETTO IMP. MECCANICI ED ELETTRICI
Ing. Sacha Busetti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

ELECTRICAL DESIGN /
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Ing. Sacha Busetti
DBA S.p.A.
Via Natale Battaglia 10, Milano (MI)

COORDINATION / COORDINAMENTO
PM - *Alessandro Masiero*
BIM Manager - *S. Di Biase*
BIM Coordinator - *R. Sodano*

INTEGRATED DESIGN / PROGETTAZIONE COORDINATA:

DBA

DBA S.p.A.
Sede legale: Piazza Roma, 19, 32045 S. Stefano di Cadore (BL)
Sede secondaria: Viale Felissent, 20/D, 31020 Villorba (TV)
tel. +39 0422.693511
certificata **ISO 9001:2015** RINA n.5923/01/S IQNet n.IT-19510

PROJECT CODE	ORIGINATOR	FUNCTIONAL	SPACIAL B.	FORM	DISCIPLINE	TYPE	NUMBER
MIL07	DBA	EX	RL	DR	A	10	003

NOTES / NOTE:

DBA PROJECT CODE	PROJECT STAGE	STATUS / STATO	REVISION / REVISIONE	DATE / DATA
13038001	WS3	S4	P01	07/11/25

REV.	REVISION DESCRIPTION / DESCRIZIONE REVISIONE	REVISION DATE
P01	S4 - RIBA 3 Submittal	07/11/25

Client / Committente: STACK INFRASTRUCTURE

Oggetto:
Esterni

Vincoli

Subject:
External

Setbacks and constraints

SIZE / FORMATO: A1 [594*841]
SCALE / SCALA: 1:500
DRAWN / REDATTO: V. Braconi
CHECKED / CONTROLLATO: V. Braconi
APPROVED / APPROVATO: D. De Bettin

FILE NAME / NOME FILE: MIL07-DBA-EX-RL-DR-A-10003.P01

Project Model: MIL07_DBA_EX-ZZ-ZZ-MD-A-000002
Project Model Version: 20250901

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